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ORIGINAL COMMUNICATIONS.

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AN OPERATION FOR DRAINING THE LACHRIMAL SAC AND THE NASAL DUCT INTO THE UNCIFORM FOSSA.

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In the removal of the anterior ethmoidal cells for empyema, or for gaining access to the nasofrontal duct and the frontal sinus, I have advocated curetting strongly forward until the instrument is stopped by the posterior edge of the ascending process of the superior maxilla, this process being a guide to the nasofrontal duct. On examining anatomic specimens so operated on, it was noticed that in many of them the posterior half of the nasal duct, where this escapes from the groove made for it by the ascending process of the superior maxilla, and where also, its inner wall is completed by the lacrimal bone, was laid bare. When the curetting was repeated with the purpose of uncovering as much as possible of the nasal duct, it was found that the whole length of it could be exposed. This observation naturally led to the thought that the nasal duct could be approached in this way and opened and drained. A little consideration of the procedure brought out the point that the duct was approached through the soft tissues instead of through hard bone, and that the operator worked up to an absolute anatomic landmark instead of skirting the side of it. Out of these observations sprang the operation about to be described. It has been abundantly tried on the cadaver and three times on the living. It is too soon to say much about the results on the living, except that so far they are good. At a later date it is my hope to report fully on

this crucial part of the subject. My purpose in this paper is to give the procedure as an anatomic operation for those to try who may be interested. I shall make no comparisons with other operations except to say that this one lacks the minutiae of some of them, and I trust that it will not be taken amiss when I add that its

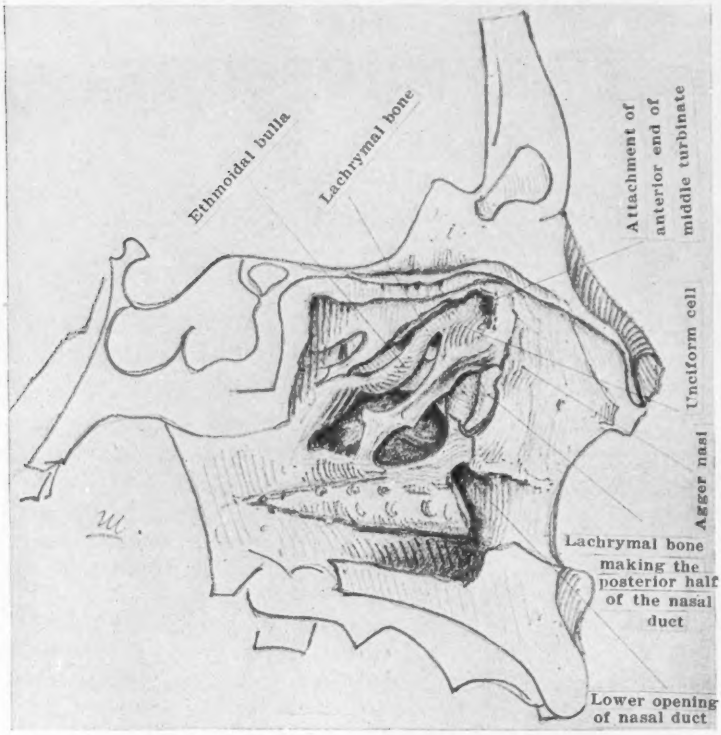
Ethmoidal bulla
Lachrymal bone
Attachment of anterior end of middle turbinate
Unciform cell
Agger nasi
Lachrymal bone making the posterior half of the nasal duct
Lower opening of nasal duct

Fig. 1. Natural size. Drawing of antro-posterior median section of the cleaned skull to show the unciform process. Note how the upper part of the unciform process mounds inward making the inner wall of the unciform cell and then runs forward onto the inner face of the ascending process of the superior maxilla. The lower half of the inner face of the lachrymal bone where this appears in the unciform fossa is shown.

various steps are along larger surgical lines and the manipulations are firmer and more definite.

The plan of this paper is to describe briefly the anatomy of the tear sac and the nasal duct, and to give the steps of the operative

procedure advocated for drainage of the sac and the nasal duct into the unciform fossa of the middle meatus.

ANATOMY.

Two bones, the lacrimal and the ascending process of the superior maxilla, make almost the whole of the bony fossa in which the lacrimal sac lies, and of the bony canal in which the nasal duct is carried along the outer wall of the middle meatus to the outer wall

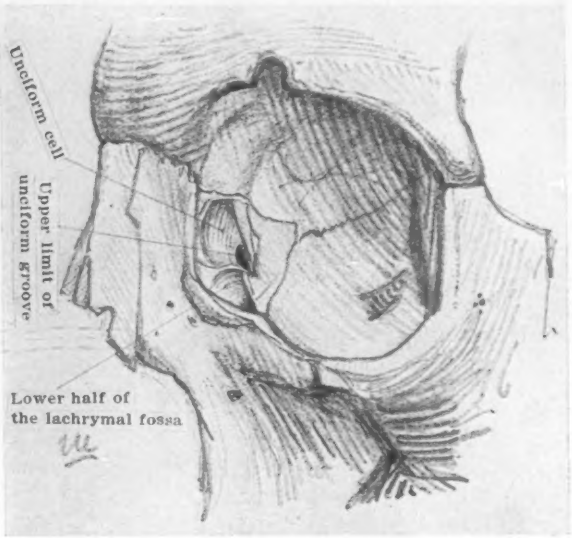

Fig. 2. Natural size. Drawing of the inner wall of the orbit from a cleaned skull. The lachrymal bone has been removed from the line of lachrymal crest forward. This drawing is made from the same specimen as drawing No. 1. The unciform or lachrymal cell which there was shown from the inside and unopened is here shown from the outside and opened. The lachrymal sac extends upward well onto the outer wall of this cell so that in dealing with the lachrymal sac from the nose it is necessary to go through the inner wall of this cell, that is, to break down the upper anterior part of the unciform process.

of the inferior meatus just below the upper rim of the inferior turbinate. A short spur from the inferior turbinate completes the duct at its lower posterior part (Fig. No. 1). From the practical standpoint this small bit of bone can be disregarded. One of these two bones, the lacrimal, is paper thin, whereas the other is sturdy. The lacrimal bone makes the posterior half of the depression in which the lacrimal sac lies and the posterior half

of the canal for the nasal duct. The grooved posterior edge of the ascending process of the superior maxilla makes the anterior half of the lacrimal fossa and the anterior half of the nasal duct. The inner lip of the ascending process of the superior maxilla is thickest where it forms the anterior part of the lacrimal fossa. In other words, opposite the attachment of the anterior end of the middle

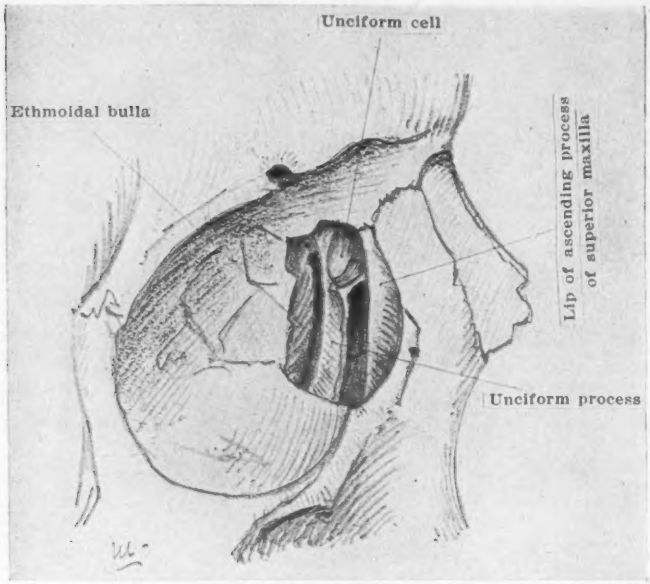

Fig. 3. Natural size. Drawing of the inner wall of the orbit from a cleaned skull. The lachrymal bone has been removed, exposing the unciform process. At the upper part of the unciform process the unciform or lachrymal cell is seen. Below this cell the anterior edge of the unciform process fits into the groove of the lachrymal bone which on the orbital surface makes the lachrymal crest. In this instance it articulates with the whole length of the inner surface of the crest. In many instances it articulates with only the upper part of the inner surface of the crest.

turbinate it thickens into the ridge known as the agger nasi. From this point until the attachment of the inferior turbinate is reached, the inner lip of the ascending process of the superior maxilla becomes thinner until it has about the thickness of paper. One ethmoidal cell, the unciform cell, and one process of the ethmoidal bone, the unciform process, come into relationship with the lacrimal bone (Fig. No. 2).

THE UNCIFORM PROCESS.

The unciform process is a thin flake of bone, shaped roughly like a scimitar, which springs from the anterior end of the ethmoidal labyrinth half way between its inner boundary, or the middle turbinate, and its outer boundary, or the lacrimal bone. The unciform process starts downward parallel with the lacrimal bone, but soon it swells inward. Its anterior edge embraces the inner surface of the upper part of the ascending process of the superior maxilla, while its posterior border forms the upper limit of the unciform groove (Fig. No. 3). Below this swelling it bends outward and its inner face attaches itself to the lacrimal bone. In this way a sizable ethmoidal cell is formed to the outside of the upper third or half of the lacrimal bone. Below the inward mounding caused by this cell, the unciform process narrows markedly and makes a partial twist on its vertical axis, bringing the anterior edge in contact with the inner surface of the lacrimal crest of the lacrimal bone. As before, the posterior edge of the unciform process continues to make the anterior boundary of the unciform groove. By this maneuver a V-shaped slit, the apex of which is anterior is left between the unciform process and the lacrimal bone. The anterior boundary of the unciform cell is made by the posterior surface of the ascending process of the superior maxilla, and at this point may measure from 0.5 to a full centimeter.

THE UNCIFORM FOSSA.

The unciform fossa is uncovered by the flap turned back for exposing the field in this operation. It is bounded posteriorly by its most prominent landmark, the posterior edge of the unciform process; anteriorly by the posterior edge of the ascending process of the superior maxilla; superiorly by the inward swelling made by the unciform process; and inferiorly by the upper rim of the inferior turbinate. When it is stripped of mucous membrane and periosteum, its floor is seen to be made by the lacrimal bone, the unciform process, and by a small membranous area in the lower portion of the fossa between these two bones. The extent to which the unciform process dominates the fossa varies greatly. In the common type, the unciform process makes the posterior inferior quadrant, and then becoming broader, extends forward and overlaps the inner surface of the ascending process of the superior maxilla, thus filling the whole upper half of the fossa. The inferior anterior quadrant is made by the lacrimal bone and the membranous area. In this quadrant anteriorly, the nasal duct comes to the surface behind the ascending process of the superior maxilla. The posterior inferior

corner of this quadrant is membranous. This membranous area is about a centimeter in front of the ostium of the antrum and on a line with it. An opening made through it leads to the unciform groove and into the antrum. When the unciform process is narrow, 1.5 cm. of the nasal canal appears in the fossa as well as an area of the lacrimal bone behind the line of the lacrimal crest, which measures vertically a centimeter and transversely 0.5 cm. The membranous area in such cases measures 0.5 cm. in both diameters (Fig. 1).

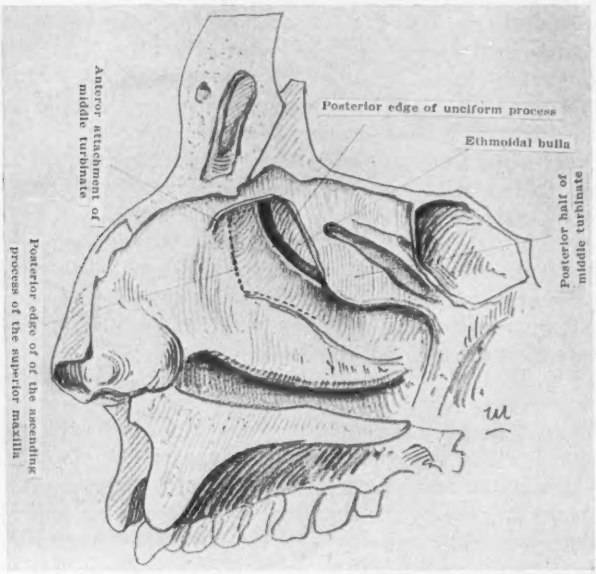
Anterior attachment of middle turbinate
Posterior edge of unciform process
Ethmoidal bulla
Posterior half of middle turbinate
Posterior edge of of the ascending process of the superior maxilla

Fig. 4. Three-fourths natural size. Drawing to show the unciform fossa and the three incisions which mark out the flap.

THE UNCIFORM OR LACRIMAL CELL.

The unciform cell occupies the space between the upper part of the unciform process and the corresponding portion of the lacrimal bone. The unciform process owing to its pronounced inward mounding makes the upper, the posterior, the inferior, and the inner wall of the cell (Fig. 2). The outer wall is made by the upper half or two thirds of the lacrimal bone. The cell extends the whole width of the lacrimal bone, and comes into relationship with the upper half of the lacrimal sac.

THE LACRIMAL SAC AND THE NASAL DUCT

"The lacrimal sac is so placed that its highest part extends somewhat above the internal palpebral ligament (2-3 mm.). On the back of the sac lies the belly of Horner's muscle, arising from the so-called reflected tendon of the orbicularis. The diameter of the sac when distended is about 6 or 7 mm., its length about 12 mm. The length of the succeeding nasal duct is very variable. According to von Gerlach, it is from 12 to 14 mm., about the same as the sac. He states that it is often prolonged at the lower end in the thickness of the mucous membrane so as to reach a length of 20 mm. Frozen sections show that in the undistended state the anteroposterior diameter of both sac and duct exceeds the transverse. The distance from the posterior border of the nasal opening is given by Alt as 30 to 35 mm., by von Gerlach as 28 to 30 mm. In no one of eight measurements by Dr. Tenny was it as much as 28 mm. Valves have been described in various parts of the tear passages. They are for the most part irregular and inconstant folds, and the best marked seems to be at the junction of the sac and the nasal duct. It is rarely, however, a perfect valve. The opening at the duct into the inferior meatus, while presenting no true valve, is of a nature to impede regurgitation."*

THE OPERATION.

Fig. No. 4.—*First Step*: The operation can be done under local or general anesthesia. I prefer general anesthesia because this permits a more extensive removal of the lip of the ascending process of the superior maxilla where this makes the anterior half of the inner wall of the bed of the sac and of the nasal duct. The anterior end of the middle turbinate is removed, taking away as much as possible of the superior overhang of the turbinate: in other words, going high on the extreme upper anterior part of the middle turbinate where this overhangs the unciform groove. The unciform process should be fully exposed. If the operator prefers, this can be done under cocain anesthesia as a preliminary procedure. This will give a less bloody field when the main operation is carried out. The punctum lacrimalis is dilated, or better it is slit, sufficiently to admit the introduction of the writer's stiff probe, and this is carried through the duct into the inferior meatus.

Second Step: The anterior end of the middle turbinate having been removed and the unciform process exposed, an incision is made with an appropriate knife along the posterior edge of the ascending process of the superior maxilla, beginning the cut through

the mucous membrane and the periosteum at least as high as the level of the anterior attachment of the middle turbinate (Fig. No. 5). This incision is carried downward and slightly backward, roughly paralleling the edge of the ascending process of the superior maxilla. It stops at the upper border of the inferior turbinate. This

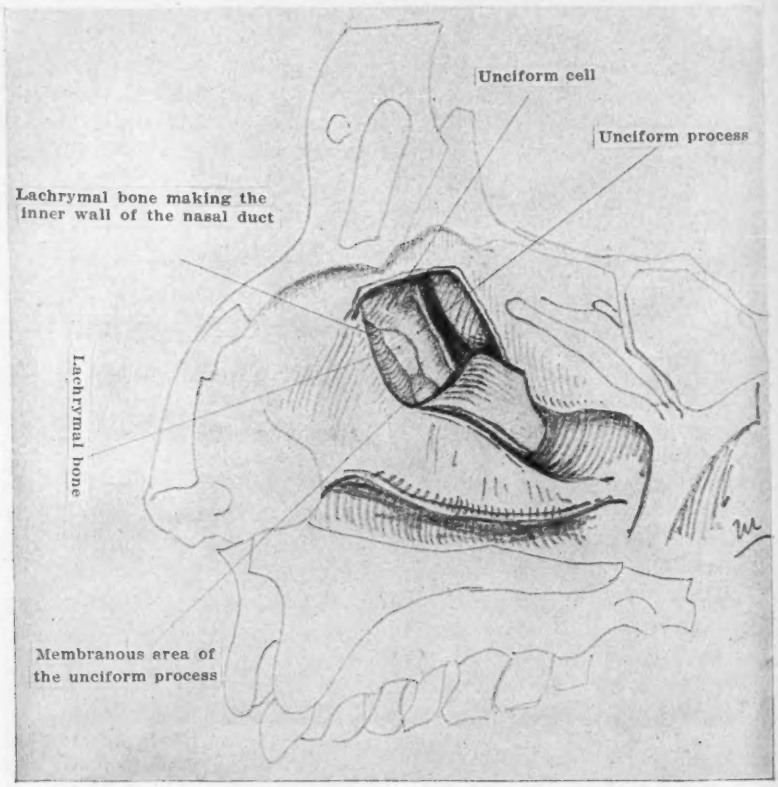
Unciform cell
Unciform process
Lachrymal bone making the inner wall of the nasal duct
Lachrymal bone
Membranous area of the unciform process

Fig. 5. Natural size. Drawing to show the flap dissected up and turned back and exposing the bones which make the floor of the unciform fossa.

point on the wet specimen is approximately 1⅛ inches from the lower border of the nasal notch. This distance can be marked on the handle of the knife as a guide. Another method of locating the posterior edge of the ascending process of the superior maxilla is to palpate the unciform fossa from behind forward with the right-

angled knife with which the incision is made. The floor of the fossa is composed of thin bone which yields readily under the pressure of the point of the knife whereas, when the anterior limit of the fossa is reached, it meets the firm bone of the side of the ascending process of the superior maxilla. From the bottom of the vertical incision, a horizontal incision is now made along the upper rim of

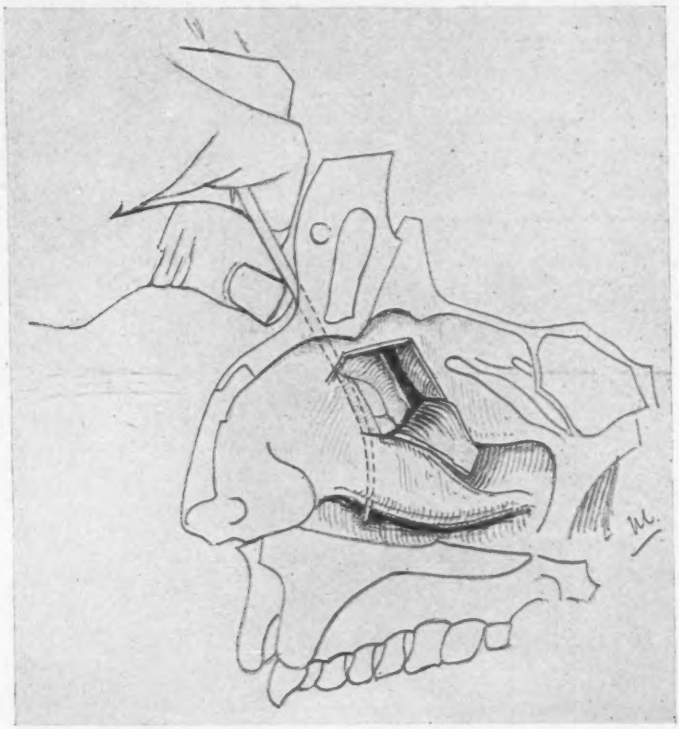

Fig. 6. Three-fourths natural size. Drawing showing the stiff probe carried through the lachrymal sac and the nasal duct into the inferior meatus. The manner in which the hand grasps the probe is shown.

the inferior turbinate for about half an inch, in other words, well through the lower part of the unciform fossa. From the top of the vertical incision a second horizontal incision is carried backward across the upper limit of the fossa and over the inner face of the extreme upper part of the unciform process, that is, over the inner wall of the unciform cell. This incision should be made as high

as possible in order to obtain a full-sized flap. If the unciform fossa is shallow, it is easy with a small semisharp elevator slightly curved on the flat, to raise the flap which has just been marked out. If the fossa is deep, its elevation is more difficult and some of it may be lost. The elevation progresses best if it is started at the bottom of the fossa and carried backward and then upward. Often on the

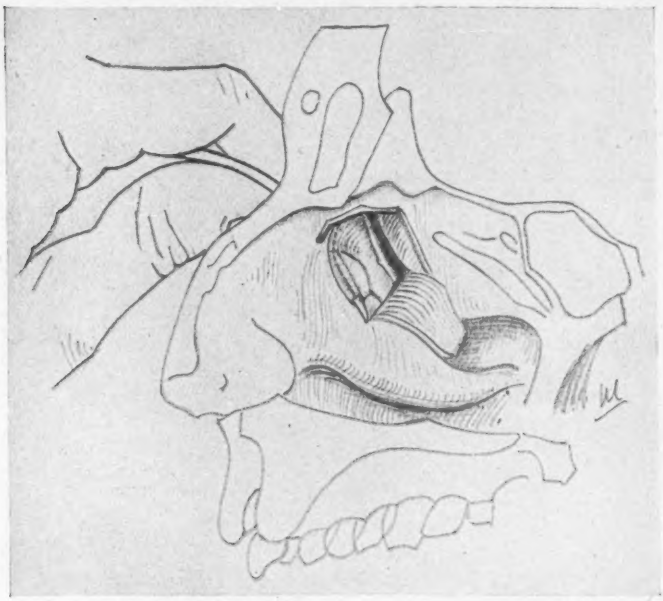

Fig. 7. Three-fourths natural size. Drawing to show the end of the probe withdrawn in the nasal duct to the upper rim of the inferior turbinate and forced through the inner wall of the nasal duct into the unciform fossa. Using the thumb as a fulcrum the point of the probe is swung strongly forward. It follows the line of the nasal duct (dotted line in drawing) and opens this into the lachrymal sac and it opens also, as experiments on the cadaver have shown, the inner wall of the sac to the top of Horner's muscle; in other words, it slits all of the inner wall of the normal sac except the upper two millimeters.

cadaver, the flap breaks away from the upper portion of the posterior edge of the unciform process, leaving it attached only at the base of the fossa. This is shown in Figure 2. Such a flap can be pushed backward more easily and lies out of the way better than the flap which retains its attachment to the full length of the posterior edge of the unciform process.

After the flap is elevated, it is tucked backward and downward so as to expose as much as possible of the unciform fossa. If the elevator strikes the side of the unciform fossa at too great an angle, there is danger of perforating the membranous area and en-

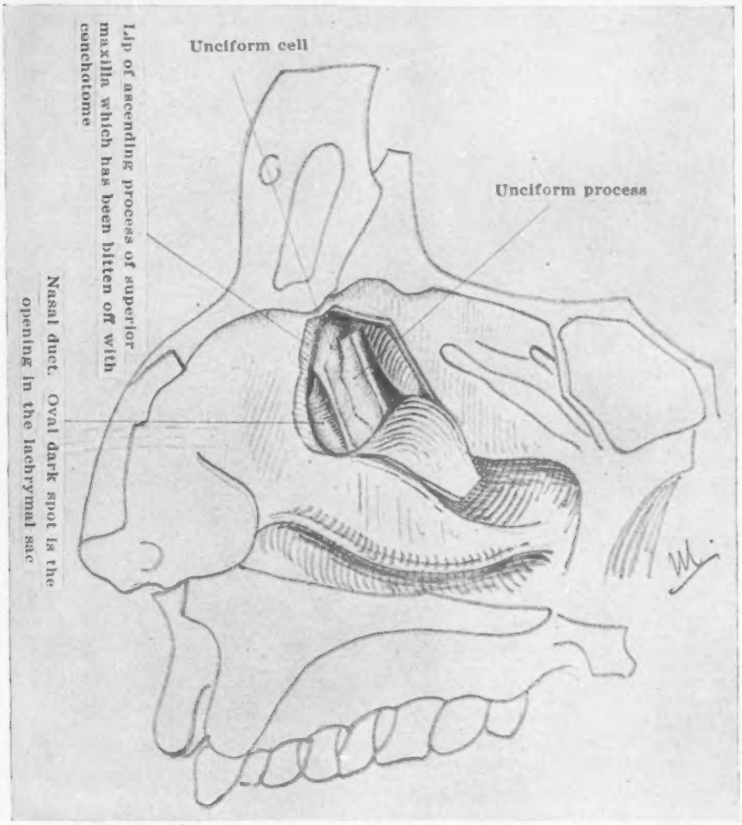
Unciform cell
Unciform process
Lip of ascending process of superior maxilla which has been bitten off with conchotome
Nasal duct. Oval dark spot is the opening in the lachrymal sac

Fig. 8. Natural size. Drawing to show the completed operation before the mucous membrane flap is turned back into place. Notice that only the upper anterior part of the unciform process has been removed.

tering the unciform groove and the antrum. Furthermore, there is the added danger of going under the anterior edge of the unciform process and elevating this with the mucous membrane. No harm results if the flap is kept intact. If it is not, either of these hap-

penings may result in a permanent opening into the antrum, and a passageway may be established by which pus from the lacrimal sac can enter and perhaps infect the antrum.

Third Step: While the first and second steps of the operation (Fig. No. 6)—the removal of the anterior end of the middle turbinate, and the elevation of the flap—are being performed, the stiff probe has been lying in the nasal duct. It supports itself in place without attention. The third step of the operation consists in curetting through the inner wall of the lacrimal cell with an ap-

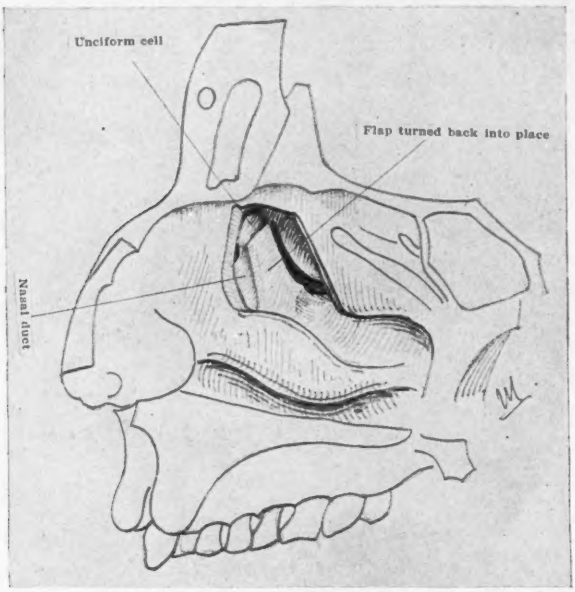

Fig. 9. Three-fourths natural size. Drawing to show the completed operation with the flap turned back into place.

propriate curet. The instrument is carried outward toward the lacrimal bone into the cavity of the cell and then brought forward against the posterior border of the ascending process of the superior maxilla as is done in curetting the anterior ethmoidal cells for gaining access to the nasofrontal duct; with this difference, that the curet is never turned backward, and then carried downward. If this is done, the unciform process is removed. The aim of the operator is to remove only the upper anterior part of the unciform process where this forms the inner wall of the unciform cell, but not to re-

move the process itself. This would result in opening the antrum. It is best, therefore, to hug the posterior edge of the ascending process of the superior maxilla with the curet and with the conchotome, with which fragments are removed after the initial use of the curet. This sounds complicated in the routine description, but a little practice on the cadaver or on the living soon shows that it is not.

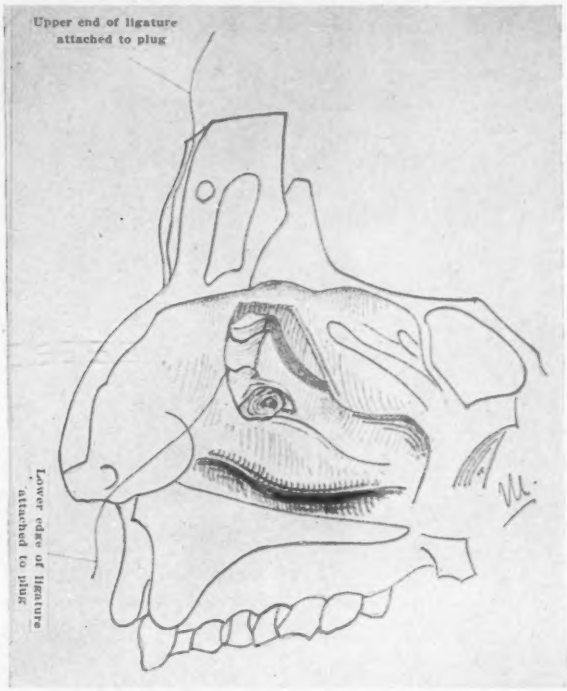

Fig. 10. Three-fourths natural size. Drawing to show the plug of gauze holding the flap in place.

Fourth Step: The fourth step of the operation consists in slowly withdrawing the stiff probe and at the same time making pressure inward with its point. As soon as the point of the probe escapes from the upper rim of the inferior turbinate (Fig. No. 7), it breaks through the inner wall of the nasal duct into the unciform fossa. The point of the probe is now advanced a little into the cavity of the nose, and then swung strongly upward. In its upward ex-

cursion it lays open the inner wall of the nasal duct from the inferior turbinate into the lacrimal sac, and the inner wall of the lacrimal sac to the top of Horner's muscle, leaving only the upper 2 or 3 mm. of the inner wall of the sac unopened. This has been proved conclusively by at least fifty operations on the cadaver. The upward sweep of the point of the probe is brought to rest by the resistance of the bone of the upper portion of the ethmoidal labyrinth, but not until the lacrimal sac and the nasal duct have been opened in this thorough fashion (Fig. No. 8).

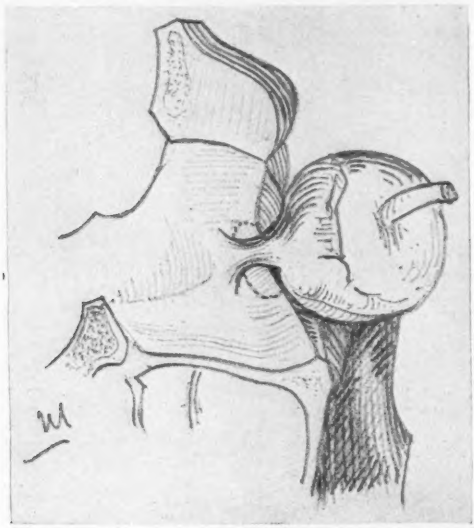

Fig. 11. Natural size. Drawing showing the eye freed from the orbit posteriorly, turned forward and left attached only by Horner's muscle. The dotted lines show the limits of the lachrymal sac and its relationship to Horner's muscle.

Fifth Step: The stiff probe is reintroduced, and held if necessary while the operator curets along the whole length of the posterior surface of the ascending process of the superior maxilla with a small curet, the bowl of which is at a right angle with the shaft. This curet is used to remove spicules of the lacrimal bone where they still cling to the inner wall of the open duct, and to remove fragments of the upper part of the unciform process where this process made the inner wall of the unciform cell. The presence of the probe in the duct protects the mucous membrane lining the outer wall of the nasal duct and the lacrimal sac. The curetting should provide a surface for the smooth placing of the tip of the flap.

Sixth Step: The stiff probe is withdrawn and the bed of the nasal duct widened by biting away the anterior part of the inner wall of the canal where this is made by the lip of the ascending process of the superior maxilla (Fig. No. 9). In a thin bone, the whole of this can be taken away, in a thick one the lower two thirds. This practically doubles the width of the nasal duct. A ligature carrier is now passed from the nose out through the dilated or slit punctum. One end of the ligature being caught and held, the carrier is withdrawn, thus leaving the ligature traversing the sac. To the end of the ligature which is brought out of the nose a small piece of gauze is attached, kite-tail fashion. The flap is replaced and smoothed into position and then traction on the eye end of the ligature draws the tampon into place in the upper part of the nasal duct. The ligature should not be too large, nor should either end be drawn too tight, for fear of cutting the punctum by the upper end and the vestibule of the nose by the lower (Fig. No. 10). A small piece of adhesive plaster is used to hold the upper end of the ligature to the skin of the forehead, and the lower end to the cheek. The plug is left in two or three days according to the amount of reaction which it causes. The plug should be large enough to hold the flap firmly in place.

The After-Treatment: The after-treatment is along the usual lines. Crusting and granulations are dealt with as after any nasal operation. When the operative reaction has subsided, the nasal duct is probed at gradually decreasing intervals until the mucous membrane of the unciform fossa and the nasal duct has readjusted itself and healed, and the tendency to narrowing of the duct has been overcome. This operation, like all others, faces the danger of the gradual narrowing and final reclosure of the duct. The time when this danger will assert itself and so the length of time during which probing will be necessary, experience will have to demonstrate. Whenever this unwelcome tendency asserts itself, it should be a simple matter to introduce the stiff probe and under vision to go through the manipulations of reslitting the duct. As a matter of some scientific interest, it might be stated that after this operation, the nasal duct can be probed either from the nose or from the inner canthus (Fig. No. 11).

The operation as described here has been given in steps. These make a sizable total, six; but in practice the procedure is really very simple—apart, perhaps, from the raising of the flap—and the various steps follow so naturally and so blend in the performance of them that the procedure is much shorter than one would suppose from the length of the description.

SUMMARY.

The essential steps of the operation are the uncovering of the unciform fossa by the removal of the anterior end of the middle turbinate, and the dissection of a mucous membrane and periosteal flap from the fossa; the breaking down of the inner wall of the unciform cell and the slitting of the inner wall of the nasal duct and lacrimal sac, and the widening of the nasal duct by removing the lip of the ascending process of the superior maxilla. The thing to avoid is opening the unciform groove and establishing an accessory ostium of the antrum which, from its position, would carry

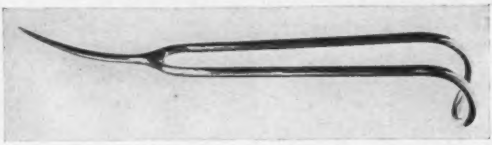

Fig. 12. Reduced one-half. Writer's stiff probe for slitting the lachrymal sac and the nasal duct.

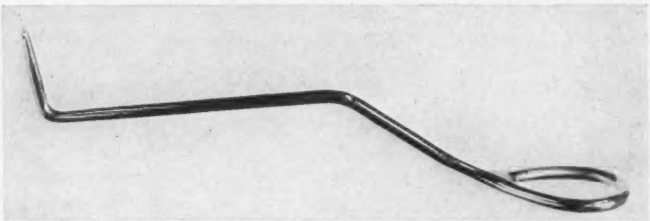

Fig. 13. Full size. Writer's ligature carrier. The eye of the instrument does not show in the illustration. The present instrument is made shorter and with a blunt point.

infection from the lacrimal sac into the cavity of the sinus. Like all other operations on the lacrimal canal, it faces the danger of cicatricial closure of the canal and the necessity of reslitting the duct and the sac; but unlike the other measures known to me, it gives a much larger opening of the lacrimal sac and the nasal duct. Should reslitting of the canal become necessary, it is is easily executed under direct vision. The operation has the advantage that the manipulations are carried out in thin bone and toward an absolute anatomic landmark. The steps of the operation are definite and lack excessive minutiae.

In the three clinical cases I have had the advice and assistance of Dr. C. T. Porter, recently senior ophthalmic house-officer at the Massachusetts Charitable Eye and Ear Infirmary (Figs. 12, 13, 14).

828 Beacon Street.

AN IMPROVED TECHNIQUE IN THE APPLICATION OF THE THIERSCH GRAFT IN THE RADICAL OPERATION FOR CHRONIC MIDDLE-EAR SUPPURATION.*

DR. EDWARD BRADFORD DENCH, New York.

In my experience, the application of the Thiersch graft, in cases of chronic middle-ear suppuration, operated upon by the so-called radical operation, materially shortens the period of convalescence. This method has been employed by me for the last fifteen years, with progressively better results. I admit that at first either primary or secondary grafting is not apt to meet with the success which the operator desires; at least, this was my own experience for a number of years. Persistence, however, in the plan, and gradual improvement in the technique of the operator, has, in my own cases, been followed by the most gratifying results. That these results are not imaginary can be best demonstrated perhaps by the attitude which my assistants have taken regarding the use of the skin graft in cases of this character.

When I first practiced this procedure, I am quite certain that members of my staff did not believe that the results obtained justified the increased time which the procedure occupied; of late years, however, one man after another has fallen into line, until now all men working with me have adopted this primary grafting as a procedure of election in cases of middle-ear suppuration which are subjected to the radical operation.

As the procedure was first carried out, it was customary to first line the entire radical cavity with a single skin graft, if this were possible; if not, to line this cavity with several smaller grafts, the grafts being held in place by pledgets of cotton impregnated with aristol or some similar antiseptic powder; secondly, a meatal graft was used to cover the cut edges of the newly-formed external auditory meatus.

This graft was applied in one of two ways,—either by the method of Ballance, in which the graft was first applied to the posterior surface of the auricular flap, and then folded through the meatus, so as to cover the raw surface caused by enlarging the meatus, or, secondly, by the method which the writer advised for many years, namely, the suturing of the posterior wound, thus replacing the auricle, and subsequently applying the meatal graft through the enlarged external meatus, the graft being folded around the cut

*Read before the Forty-eighth Annual Meeting of the American Otological Society, held at Niagara Falls, Canada, June 3 and 4, 1915.

margin of the canal, so as to cover not only the cartilage, but also to cover the raw surface on the internal aspect of the anterior flap which must necessarily remain as the result of separating this anterior flap from the surface of the mastoid.

Both of the above methods were open to one serious objection. This objection lay in the fact that by neither procedure was the grafted area of the middle-ear cavity continuous with the grafted area of the flap. Troublesome granulations invariably appeared just where the flap of soft tissue joined the bony surface of the mastoid. These granulations were frequently difficult to overcome, and complete dermatization of the entire radical cavity was thus delayed. While the middle-ear cavity might heal perfectly,—and usually did heal perfectly in the course of two weeks,—discharge would occur from the posterior superficial area for at least two weeks longer, owing to the fact that the denuded area had not been perfectly covered by the grafts.

In a series of cases which have been operated upon during the last six or seven months, the procedure has been modified as follows: A large graft is made to line completely the middle-ear cavity. A second graft, about an inch wide and one and a half to two inches long, is then applied to the posterior margin of the bony wound, completely covering the posterior margin of the cavity, and sometimes overlapping the graft already applied to the radical cavity, in case this graft has been large. This second graft is spread out posteriorly, and the portion extending into the middle-ear cavity is held in place by firm gauze packing. The portion of the graft which extends posteriorly, is then bent forward upon itself, threaded through the external auditory meatus, and spread out so as to cover completely the cut margins of the canal. The auricle is then sutured back in place. The meatal portion of the graft is held in position by a second strip of gauze, carried through the external auditory meatus. In this way, we have a continuous cutaneous lining of the middle-ear cavity and of the margins of the meatus.

This procedure has been modified by the insertion of a very large quadrilateral graft, sufficient in size not only to line the middle-ear cavity, but of sufficient length to be drawn through the meatus, in the manner already described, so that we have one continuous graft lining the entire middle-ear cavity and covering the entire cut area of soft tissues which results from the enlargement of the external auditory meatus.

The results of this improved procedure have been so flattering that it seemed wise to report this improved technique to the Society.

15 East Fifty-third Street.

REPORT OF SPONTANEOUS CURE OF SIX CASES OF UNRECOGNIZED SINUS THROMBOSIS ACCIDENTALLY DISCOVERED DURING OPERATION.*

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There is probably no aural complication in which the chief clinical phenomena more clearly indicate the morbid changes present than a virulent infective sinus thrombosis. The symptoms which first attract attention are the marked irregularities in temperature, intermittent in character and ranging from normal, or sub-normal, to 103° or 105° and associated with chills followed by sweating. These symptoms are due to the periodic discharge of septic material into the blood stream, as a result of the breaking down of the infected clot. The presence of a bacteremia with later evidences of secondary foci of infection complete the cycle of symptoms generally considered necessary for the diagnosis of infective sinus thrombosis.

For several years the writer has been slowly forming the opinion that there is a far greater number of cases of sinus thrombosis from aural infections without these marked symptoms than is generally supposed.

The steps in the typical sinus thrombosis are:

1. The original ear infection.
2. The extension of this infection to the inner wall of the sinus, and clot formation.
3. The breaking down of the clot.
4. A free discharge of the broken down material into the general circulation.

Necessarily, the absence of the fourth step must produce marked changes in the classical symptomotology.

From personal clinical findings, we would classify sinus thrombosis into three general groups:

1. Those in which the septic material is drained directly into the veins, or aspirated into the opposite sinus.
2. Those in which the distal ends of the clot remain firm and become organized, the center breaking down and draining through a rupture of the sinus wall.
3. Those in which the entire clot becomes organized and sterile, with obliteration of the sinus.

*Read at meeting of American Otological Society, June, 1915, at Niagara Falls, N. Y.

In forty-five cases of thrombosis of the lateral sinus, we found that thirty-six belonged to the first group; three in the second group, and six in the third group, giving nine out of forty-five cases, or 20 per cent atypical cases for our series.

All of the three cases of the second group had a perforation of the posterior mastoid wall over the sinus, the rupture of the sinus taking place at this point and discharging into the necrotic mastoid cavity. The symptoms were not distinctive or severe, resembling those of a mastoiditis with an epidural abscess. All made uneventful recoveries. Dr. H. Friedenwald, at a meeting of the Laryngological, Rhinological and Otological Society, 1913, reported in detail two cases of this kind where the symptoms were more severe.

It is to the third group in which the clot becomes organized with obliterations of the sinus that I wish to call special attention.

Of these we have found six cases, the diagnosis, made on the operating table, was not previously suspected. How many have been passed by unrecognized, will never be known. Their previous clinical histories are incomplete and many important symptoms were probably not noticed. The time of the formaation of the clot can be only conjectured.

Case 1: A man, aged 52, seen in October, 1910, with a history of several attacks of A.O.M.P. in previous years. In March, 1910, he had an A.O.M.P. complicating la grippe. The discharge was free, but early in the attack, the patient suffered from severe pain in the ear and frequent spells of dizziness. Occasionally there was vomiting, but there was no history of high temperature, chills or sweating. The ear discharged for one month. Since then there had been no discomfort referable to the ear, but the patient complained almost constantly of some headache on the right side. Early in October the headaches had increased in severity and sleep could only be obtained by opiates. With the increase of pain, an irritable temper and mental hallucinations developed. Examination of the ear showed no discharge. The tympanic membrane was intact, but injected. There was one point of slight tenderness about one-half inch below and behind the mastoid antrum. X-ray showed right mastoid to be opaque. Blood examination: W.B.C. 188,000; polys. 80 per cent, lymphocytes 17 per cent, large mono, and transitionals 3 per cent. Several temperature readings varied 0.2 degree above and below normal. Caloric tests were positive. Brain abscess was suspected.

On operation, the mastoid was sclerotic to a medium degree, no pus or necrosis being present. The cerebellum was uncovered, the

sinus found yellow in color, and normal in size, but obliterated by a firm fibrous tissue, removal of which was attempted with only partial success.

The healing was rapid, and the headaches and abnormal mental condition disappeared. Whether this removal of the fibrous tissue, or the decompression over the sinus from removal of the bone produced relief is conjectural.

Case 2: The patient was a middle-aged negro preacher, who applied for treatment at the Eye and Ear Hospital, for a profuse purulent otitis in the left ear. He gave a history of having contracted measles, two months previous to admission, followed by earache and profuse discharge which continued without decreasing in amount. Admitted to the hospital on November 28, 1909. Profuse purulent discharge from left ear. On December 14th, the discharge was still profuse, with severe pain in left temporal region, and tenderness over the mastoid. Smear of pus showed pneumococci, W.B.C. 17,400, polys. 87 per cent, lympho. 76 per cent, large mono and transitionals 4.4 per cent, losinophiles 3 per cent, mast cells 7 per cent. The temperature, for sixteen days, was at no time above normal and there were no chills. Mastoidectomy under local anesthesia. Large mastoid filled with granulations and pus. Perisinuous abscess over the knee of the sinus. No granulations over the sinus. Sinus opened and found filled with a firm clot, a portion of which was removed, showing signs of becoming organized. Laboratory report showed sterile clot with beginning formation of connective tissue.

Case 3: Report of attending physician—Female, age 22. She had the usual diseases of childhood, with C.P.O.M. at intervals since 6 years of age. On October 1, 1914, she was attacked with acute pain in right ear. During night patient was chilly with fever ranging from 101 to 104 degrees, headache and delirium, which continued for one week, when the delirium and ear symptoms subsided. After the second week the headaches disappeared, but on three different occasions the patient developed a cyanosis, lasting for two or three hours. The patient continued to run an irregular temperature, 100° to 103.° for four or five weeks, with a slight discharge from the ear. No mastoid tenderness, but there was tenderness along the anterior border of sterno-mastoid muscle. The Widal test was negative and the case was considered as a probable irregular typhoid. The patient, in apparent good health, consulted me December 18, 1914, for the C.P.O.M. The middle ear was filled with a

mass of granulations and foul pus. A radical mastoid was advised. This was done one month later. The mastoid, when opened, showed a cavity filled with granulations. Nature had done a partial Stacke, and through this, the granulations crowded into the deep external canal and the middle ear. The posterior mastoid wall was absent and the sinus was covered with granulations, when exposed in the mastoid cavity. The sinus was uncovered for two inches. It was of a yellowish color, hard and tense. A small exploratory incision showed it to be totally occluded with organized tissue. The sinus was not further molested. The usual Stacke operation was completed and the mastoid incision closed. The cavity was completely epidermatized and dry in five weeks.

Case 4: A girl, 5 years of age, contracted scarlet fever in January, 1913, complicated with a double A.P.O.M. The scarlet fever was of a severe type with high temperature, reaching 106° on two or three occasions, but no systematic record seems to have been kept. If chills or sweating were present, they were not noticed. The patient was admitted to the Eye and Ear Hospital on March 7. Both mastoids were tender, and there was marked swelling over the left one. The patient was emaciated and showed all signs of a severe illness. Blood examination: leucoytes 9800, polys. 67 per cent, small lymph. 23 per cent, large mono. 8 per cent, eosinophiles 1 per cent, transitionals 1 per cent. Temperature 101.°

The outer table of both mastoids lifted off as a sequestrum, the interior was infiltrated with foul-smelling pus, but with little bone necrosis in the right and a small necrotic area in the left, exposing the sinus, over which was a small perisinus abscess. The sinus was uncovered downward and posteriorly for 6 cm. It had a dull yellowish appearance and was firm to the touch. There was a small gangrenous area, where it was exposed in the mastoid cavity. The sinus was incised at this point and found filled with an organized clot. Some of this was removed for examination. The remainder was not disturbed. On the second day pain and tenderness developed in the left wrist, lasting for two weeks, but it disappeared without pus formation.

The laboratory report showed a few streptococci from pus smears in the right mastoid. The pus smear from the left mastoid was negative. Cultures from the thrombus of the left lateral sinus were negative. The healing in this case was very slow, extending over four months. The temperature was always 100° or less.

Case 5: Paul P., age 7 years; had had a discharging ear since infancy. He was brought to the Eye and Ear Hospital for an acute

exacerbation, with marked post-auricular swelling, April 7, 1915. A smear showed the usual mixed infection of C.P.O.M. No blood examination made. Operation: mastoid necrotic, large quantities of cholesteatoma. Necrosed bone over sinus removed. The sigmoid sinus was yellowish in color and firm to the touch. The lateral portion of the sinus, from the entrance of the superior petrosal sinus back towards the torcular, was normal in color and contained fluid blood. An exploratory incision in the sigmoid sinus showed complete obliteration, probably recent, by organized tissue.

The day following the operation, the temperature reached 101 2-5°, receding to normal on the second day. The patient was discharged from the hospital on the eighth day to be attended by a specialist in a neighboring town, who reports the mastoid wound nearly healed. The mother could give no history of a previous illness, other than ordinary ailments incident to childhood.

Case 6: A child of about 8 years, operated on by my associate, Dr. Waldie. The history of this case has been misplaced at the hospital and could not be found, so that this outline is given from memory. The patient was admitted to the hospital for a C.P.O.M. with post-auricular swelling and tenderness. The usual conditions were found in the mastoid with the sinus presenting through a perforation of the posterior wall. The sinus was freely exposed and incised and found occluded by organized tissue. The case was treated as an ordinary mastoid and kept in the children's ward until completely healed.

The most striking characteristic of these cases is the absence, as far as could be ascertained, of pyemic symptoms, generally considered so necessary an accompaniment of infective sinus thrombosis and the defensive efforts of nature. It seems reasonable to suppose that they were all caused by an infective organism, as five had necrotic mastoids adjacent to the sinus and Case 1 had a history of several attacks of A.P.O.M., the last one being seven months before the sinus condition was discovered.

The absence of a history of high temperature and chills is marked in five cases. The chart of Case 3, at the time of the supposed typhoid attack in connection with an active pus secreting ear, would suggest a sinus thrombosis to an otologist, but this infection must have been of a mild or attenuated nature, or the clot would have broken down instead of organizing. Case 2 was under hospital observation for fourteen days prior to operation, with practically a continuous normal temperature. The clot in this case was evidently of recent origin.

In Case 4, the high temperature reported as having occurred during the scarlet fever may have been partly due to the unsuspected thrombus, though high temperatures are frequent in severe scarlet fever.

Diagnostic symptoms, referable to the sinus condition, seem to be absent previous to and at time of operation, with the possible exception of Case 3. In Case 1, the early symptom was severe temporal pains, with mental hallucinations, while the other four had only those general symptoms common to sub-acute mastoid.

In these cases the condition present was not suspected. In Case 1, the exploration was started for a supposed abscess. In the other five, the sinus was already exposed in the mastoid cavity and further operative exposure revealed what had taken place.

The slight interference with the contents of the sinus, seemed to have had no influence in the complete recovery of the patient.

In Case 1, where firm connective tissue had formed, its removal was attempted with only partial success, and I believe it was meddlesome surgery. In two others where the clot showed partial organization, a portion was removed for laboratory examination. In the remaining three, the centers of the occluded sinuses were incised and on finding well-organized clots, were not further molested.

Nine atypical cases of sinus thrombosis out of forty-five, or 20 per cent, would seem to justify the conclusion; that absence of classical symptoms does not justify an assumption of no thrombosis. The fact that in 13½ per cent of these cases, nature effectually cured the condition before its discovery, would either indicate that this obliteration of the sinus occurs more frequently than generally supposed, or that it was our fortune to have an unusual number; that when it does occur, the infection is probably attenuated or of low virulence, creating slight constitutional disturbances; that the presence of pyemic symptoms indicates an active virulent organism, with great resistance to nature's curative action, producing symptoms that are seldom overlooked and always demand operative interference. In milder cases the diagnosis is rarely made, and when discovered, nature has already made the cure.

Westinghouse Building.

THE BACILLUS OF PEREZ AS AN ETIOLOGICAL FACTOR IN OZENA.*

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Rhinologists and experimental pathologists have concerned themselves for many years with the problem relating to the etiology of ozena. An extensive literature has appeared dealing with this condition without having given us any satisfactory explanation as to the etiology and pathogenesis of this form of chronic atrophic rhinitis. During recent years the theories which have gained greatest favor are those ascribing a specific infective agent as the etiological factor. It is not within the scope of the present paper to give a critical review of the different theories that have been advanced to explain the cause of ozena, and the authors have confined themselves to a bacteriological and clinical study of an organism isolated by Perez and claimed by him to be the cause of ozena.

In 1899 Perez[1] isolated and described an organism which he termed the *coccobacillus foetidus ozaenae* and which he believed to be the cause of ozena. He described his organism as a small, non-motile coccobacillus, somewhat polymorphic in character, stains by ordinary analine dyes and is gram-negative. It is a non-liquifier; does not coagulate milk, which is usually rendered alkaline; causes urine to undergo ammoniacal changes; on potato an abundant moist, yellowish growth develops, without bubbles of gas. The cultures of the coccobacillus give rise to a characteristic foetid odor, which is influenced to a large extent by the nature of the culture medium. Perez also claims that this coccobacillus exists normally in the nasal passages of dogs; increases greatly during attacks of distemper and that the dog is capable of spreading the disease.

These findings of Perez received but little attention until he[2] again brought them before the profession at the meeting of the Berlin Laryngological Society, in 1913, and also submitted his results to the Institute of Sero-Therapeutics in Vienna where his findings were confirmed by Hofer, and it is the published reports by Hofer that have again stimulated our interest in the etiology of ozena. Hofer,[3] in investigating the findings of Perez, gives his method of isolating the *bacillus ozaenae foetidus*, confirms the claims

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of Perez, and believes the bacillus of Perez to be the true cause of ozena. Hofer and Kofler[4] used vaccine, prepared from Perez's organism, in the treatment of ozena cases, and report improvement in crust formation, foetor, pharyngitis sicca and general subjective improvement in 7 out of 10 cases.

During the summer of 1914, one of the writers secured from Dr. Hofer, in Vienna, two cultures of the Perez bacillus which may be regarded as authentic. These cultures were used in both our bacteriological and clinical experiments and the technic was carried out as described by Hofer.

In order to obtain some data as to the frequency of ozena, the authors examined clinically 775 institutional patients, ages eight to forty, cases which were not admitted on account of any nasal affection, and found that out of 775 cases examined there were 22 cases of ozena (2.8 per cent). 512 of the cases were females and 263 were males. There were 20 cases of ozena among the females, or 3.9 per cent and 2 cases of ozena among the males, or .76 per cent. 500 of the above cases examined were inmates of the School for Feeble-Minded at Faribault, Minn.

Experimental: In our laboratory studies of the Perez bacillus we have followed the technic recommended by Hofer in an attempt to confirm his work. In our first experiments a series of 11 rabbits were injected intravenously with graduated doses of 24-hour broth cultures of the strains brought from Vienna. These animals were kept under daily observation but none of them presented the nasal discharge described by Perez and Hofer. In fact, the animals were not inconvienced in any way by the inoculation. They were killed and autopsied in periods varying from 7 days to 3 months following inoculation. In no instance could we find any changes whatever in the turbinate bones.

Assuming the cultures to be of low virulence, we set about to augment this character by means of animal passage. To this end 7 young rabbits (12 days old) were injected intravenously with 24-hour broth cultures of the Vienna strains. Four of these animals died; one on the third day, one on the fourth, and two on the fifth day following inoculation. Upon autopsy, two of the animals presented some degree of congestion of the nasal mucosa; very little secretion was present. The bacillus was removed from the heart's blood and the nasal cavities in two cases and from the heart's blood alone in the third case. The organism which was recovered from the animals was far more pathogenic for rabbits than the original cultures, as evidenced by the following experiment: A

series of 9 rabbits were injected intravenously with 1 c. c. of a 24-hour broth culture of these more virulent bacilli. Of these, five succumbed to the infection within the first four days. At autopsy cultures were taken from the heart's blood and nasal cavities of all the animals. In two of the rabbits we recovered an organism, corresponding to the one with which the animals had been injected, from the heart's blood and nasal cavities. In the remaining three the cultures were negative.

Cultures were made from the nasal cavities of the animals which survived the inoculation but in no case were we successful in recovering the Perez bacillus. All the inoculated animals which survived were later killed at intervals of from one to twelve weeks and examined. In no case was there any evidence of pathologic changes in the turbinates. Cultures taken from the turbinates were negative so far as the Perez bacillus was concerned.

Perez[1] and Hofer[5] have called attention to the difficulty of isolating their bacillus directly from the nasal crusts of ozena patients. In his paper Hofer leads us to infer that he has cultivated the organism directly from the crusts but does not definitely say so. In fact, he makes the frank admission that, in a series of cases examined, his cultural experiments met with failure in every instance. He therefore found it necessary to resort to animal inoculation; his procedure was as follows: The crusts to be examined bacteriologically were placed in sterile broth and incubated for twelve hours. Those cultures which then emitted a fetid odor were injected into the ear vein of rabbits. The animals thus treated either died or presented discharge within a few days following inoculation. From the nasal discharge Hofer isolated the bacillus in 57 per cent of his cases.

The authors have had an opportunity to make a bacteriological examination of 38 cases of ozena. Crusts taken from the patients were brought to the laboratory in sterile tubes and immediately planted in broth and upon agar plates. In some cases serum-agar was used. Cultures were incubated and daily examinations made so long as new colonies appeared, but we were unable to isolate any organisms which could be identified as the Perez bacillus. Thus, we have been able to confirm one phase of Hofer's work.

We also made use of animals in our attempt to isolate the organism. In this we followed the technique recommended by Hofer with great care. Twelve-hour broth cultures from crusts of 24 ozena patients were injected into the marginal ear vien of as many rabbits and the latter kept under careful observation. Fifteen of

the animals died between the first and fifth days following. The animals were all autopsied. No nasal discharges were present in any of them. Cultures were made from the heart's blood and nasal cavities of all the animals. The organisms recovered, in order of frequency, were as follows: Streptococcus, staphylococcus, B. mucosus, B. pyocyaneus, B. coli, proteus; nothing suggestive of the Perez bacillus was found. The remaining 9 rabbits of this series were kept under observation for some weeks but never presented any nasal discharge.

Hofer has shown that the blood serum of an animal injected with the Perez bacillus acquires the property of agglutinating the latter in relatively high dilution, 1-1000, or even higher. If the Perez bacillus bears the relation to ozena that he claims, one would expect the blood serum of infected patients to agglutinate the organism. We have made agglutination tests with the blood serum from 34 of our cases. In these tests both of the Vienna strains were used. Dilutions of 1-100 of the sera were made in all cases and in the most advanced cases dilutions of 1-50 as well. We were not able to obtain a frank agglutination reaction in a single instance.

Our serological experiments were carried one step further. Antigen was prepared from the above cultures for the complement fixation reaction and standardized against serum obtained from an immunized rabbit. Only six specimens of blood were examined by this method but these were as entirely negative as our agglutination tests.

From our work it will thus be seen that we have not been able to obtain any experimental evidence in support of the contention of Perez and Hofer that their organism is the specific agent of this form of chronic atrophic rhinitis. We are inclined to believe that the work of Perez and Hofer has failed to bring forth any convincing evidence that the organism in question has any relation to the primary cause of ozena. Hofer apparently is not sure that he has ever isolated the organism directly from his patients. The organism he calls the Perez bacillus apparently was isolated from the nasal cavities of the rabbit which had been inoculated with cultures taken from the nose of an ozena patient. Assuming this culture to be the Perez bacillus, Hofer proceeded to immunize a rabbit in order to obtain a specific agglutinating serum. All cultures which were subsequently isolated from the nose of rabbits and agglutinated by the serum prepared against his first culture he considered as Perez bacilli. Hofer cautions against relying altogether upon the biological and morphological character of the organism for its identifica-

tion; for its complete identification he finds the agglutination test imperative.

Clinical study: The material used by the writers in carrying out the vaccine treatment, was obtained from the clinical and private practice of one of the authors and consisted of selected cases which presented the characteristic signs of ozena and which were kept under treatment and observation a sufficient length of time to enable the authors to draw some definite conclusions as to the results obtained. Twenty cases were treated with Perez vaccines. Of these cases, twelve were under treatment for periods of from three to eight months and are herewith reported. Vaccines, prepared from Perez cultures, were administered in doses from 50,000,000 to 500,000,000, at intervals of seven days. No other treatment was carried out, either local or general.

Case 1. L. N. F., male, age 27. Diagnosis: Ozena. Onset: age 12. No nasal symptoms at birth or following until age of 12. Whooping cough at age 12. Wassermann: negative. Tuberculosis: negative. No history of similar nasal affection in family. No history of contact with dogs or other animals. Large, greenish crusts present in middle meati. Inferior turbinates: Advanced atrophy, right and left. Middle turbinates: Moderately hypertrophied. Nasal mucous membrane dry and atrophic. Foetor present. Sense of smell impaired. Sinuses: Ethmoiditis. External nose: No changes. Atrophic pharyngitis. Does not complain of discomfort in pharynx. Tonsils moderately hypertrophied. Larynx and trachea: No objective changes; occasionally has acute laryngitis.

Treatment: Perez vaccines, 50,000,000 to 500,000,000 at intervals of 7 days. Reaction: Considerable local reaction in arm following second injection (100,000,000); swelling and soreness in arm lasted 24 hours. Result: No improvement during treatment. Odor present but not pronounced. No change in pharynx.

Case 2. M. O., female, age 16. Diagnosis: ozena. Onset: age 10. No nasal symptoms at birth. Measles and chicken-pox during childhood. Wassermann: negative. Tuberculosis: negative. No history of similar affection in family. No history of contact with dogs. Large, greenish crusts present in middle meati and extending into inferior meati. Inferior turbinates: very advanced atrophy, right and left. Middle turbinates: atrophied. Nasal mucous membrane dry and atrophied. Foetor: present and very pronounced. Sense of smell: impaired. Sinuses: anterior ethmoiditis. External nose: broad. Atrophic pharyngitis. Pharynx feels dry. Hypertrophied tonsils and adenoids. Larynx and trachea: no objective changes; occasional attacks of acute laryngitis.

Treatment. Perez vaccines, 50,000,000 to 400,000,000. Reaction: Slight local reaction at site of injection following third treatment. Result: Foetid odor diminished and disappeared after fifth injection (250,000,000). Lessened crust formation; crusts becoming much smaller in size and easily expelled. Mucous membrane more hyperaemic. Discomfort in pharynx disappeared. This case was compelled to leave the city after dosage of 400,000,000 and is reported because it showed most marked improvement of all cases treated.

Case 3. D. M., male, age 42. Diagnosis: Atrophic rhinitis (bilateral). Onset: age 20. No history of prior nasal involvement. Measles and pneumonia during childhood. Has had rheumatism. Wassermann: negative. Tuberculosis: negative. No history of similar nasal affection in family. No history of contact with animals. Small crusts present in middle meati, right and left. Very advanced bilateral atrophy of inferior turbinates and moderate atrophy middle turbinates. Mucous membrane atrophic. Nasal passages very large. Foetor not pronounced. Sense of smell impaired. Marked atrophic pharyngitis. Pharynx feels dry. Faucial tonsils moderately hypertrophied. Has had occasional attacks of acute laryngitis.

Treatment. Perez vaccines, 50,000,000 to 500,000,000. Reaction: increased discharge and headache followed second injection. Result: no objective changes in crust formation; no improvement in pharyngitis; slight odor present.

Case 4. C. M., male, age 15. Diagnosis: Ozena. Onset: age 12. No history of nasal involvement immediately after birth, but history of nasal obstruction since age of 6 or 7 years. Scarlet fever at age 8 years. No history of similar nasal affection in other members of family. No contact with dogs or other animals. Wassermann: negative. Had tuberculous cervical glands removed at age of 10 years. No pulmonary tuberculosis. Moderately large crusts present, right and left nostrils. Inferior turbinates: Atrophied. Middle turbinates: Moderately hypertrophied. Slight ozena foetor present in crusts but not very pronounced. Sense of smell not impaired. Atrophic pharyngitis. Pharynx dry. Hypertrophied tonsils and adenoids. External nose: broad. Larynx: normal.

Treatment. Perez vaccines, 50,000,000 to 500,000,000. Reaction: none. Result: no change in nasal condition. Slight foetor present. No change in pharynx.

Case 5. M. K., female, age 13. Diagnosis: Ozena. Onset: age 5. No nasal symptoms immediately after birth or previous to age of 5 years. Measles and whooping cough at age of 6 or 7 years. Father

had similar nasal affection. History of contact with dogs from age 5 to 7. Wassermann: negative. Tuberculosis: negative. Very large, greenish crusts present, right and left nostrils. Inferior turbinates: advanced bilateral atrophy. Middle turbinates: atrophic. Mucous membrane: dry and atrophic. Foeter: present. Sense of smell: good. External nose: normal. Atrophic pharyngitis. Adenoids and moderately hypertrophied tonsils. Has occasional attacks of acute laryngitis. Sinuses: ethmoiditis.

Treatment: Perez vaccines, 50,000,000 to 500,000,000. Reaction: slight local reaction at site of injection after third and fifth treatment. Result: crusts present; no objective changes; patient says crusts more easily expelled. Odor less. No discomfort in pharynx. Mucous membrane not as dry as formerly.

Case 6. E. A., female, age 23. Diagnosis: atrophic rhinitis (bilateral). Onset: age 12. No nasal symptoms immediately following birth. Measles during childhood. No history of similar nasal affection in family. Dogs kept in family before beginning of nasal affection and onset. Wassermann: negative. Tuberculosis: negative. Large crusts present in right and left nostrils. Septum moderately deviated to left. Inferior turbinates: atrophied, right and left. Middle turbinates: right enlarged; left, normal in size. Foetor: pronounced for number of years; not noticeable at present. Sense of smell: unimpaired. External nose: normal. Atrophic naso-pharyngitis. Sinuses: ethmoiditis and sphenoiditis.

Treatment: Perez vaccines, 50,000,000 to 500,000,000. Reaction: increase in nasal discharge following second and third injection. Headache following last injection. No rise in temperature. Result: no improvement, subjectively or objectively, until after sixth injection (300,000,000). Following sixth treatment, patient reported improvement in condition of pharynx, and crusts more easily expelled. Final result: crusts present. Atrophic pharyngitis shows improvement.

Case 7. N. H., male, age 49. Diagnosis: atrophic rhinitis (bilateral). Onset: age 20. No chronic nasal affection prior to onset of present involvement. Measles at age of 6; scarlet fever at age of 7. No history of similar nasal affection in family. No history of contact with dogs. Wassermann: negative. Tuberculosis: negative. Very large, greenish crusts present right and left nostrils. Inferior and middle turbinates, right and left, atrophic. Nasal passages large. Mucous membrane atrophied. Septum moderately deviated, with small spur present. Foetor: has been very pronounced until few years ago. At present foetor slight. Sense of

smell fairly good. External nose: normal. Atrophic pharyngitis: pharynx dry and uncomfortable. Larynx: no objective changes; formerly had frequent attacks of acute laryngitis. Sinuses: ethmoiditis and sphenoiditis.

Treatment. Perez vaccines, 50,000,000 to 500,000,000. Reaction: no reaction in nostrils. Following third injection there was considerable pain and discomfort in arm, extending to elbow and shoulder; swelling at site of injection; duration 24 hours. Result: crusts present; apparently no change. Pharynx does not appear as dry and glazed and patient insists there is less discomfort in nostrils and pharynx. Slight odor present on crusts.

Case 8. H. M., female, age 14. Diagnosis: ozena. Onset: age 6. No nasal symptoms present immediately after birth. Mumps, measles, pneumonia and rheumatism between ages 6 and 12. One sister had similar nasal affection. No history of contact with dogs. Wassermann: negative. Tuberculosis: negative. Moderately large, greenish crusts present right and left. Inferior turbinates: atrophied. Middle turbinates: moderate hypertrophy. Mucous membrane of nostrils dry and atrophic, except on middle turbinate. Foetor present but not very pronounced. Sense of smell impaired. External nose: normal. Atrophic pharyngitis, but does not complain of much discomfort in pharynx. Faucial and pharyngeal tonsils moderately hypertrophied. Larynx: no objective changes. Sinuses: ethmoiditis.

Treament. Perez vaccines, 50,000,000 to 500,000,000. Reaction: slight local reaction in arm after second injection. Following third injection, patient complained of headache and increased nasal discharge. Result: patient says she cannot notice any improvement. Crusts are present. No odor present.

Case 9. O. F., male, age 11. Diagnosis: ozena. Onset: age 7. No history of any nasal symptoms appearing immediately after birth. Measles at age of 6; whooping cough at age of 8. No history of contact with dogs. Wasserman: negative. Tuberculosis: negative. Crusts present right and left nostrils, and muco-purulent discharge on middle turbinates. Inferior turbinates: atrophied. Middle turbinates: not atrophied, mucous membrane middle turbinates edematous. Foetor: present. Sense of smell; not impaired. External nose: broad. Follicular pharyngitis. Moderately hypertrophied faucial and pharyngeal tonsils. Larynx: not involved. Sinuses: ethmoiditis.

Treatment. Perez vaccines, 50,000,000 to 500,000,000. Reaction: none. Results: no improvement.

Case 10. A. P., female, age 22. Diagnosis: ozena. Onset: age 6. No nasal symptoms immediately after birth. Mumps at age 12. Mother and one brother had similar nasal affection. Patient came in contact with dogs, cattle and horses during childhood (at onset of nasal affection). Wassermann: negative. Tuberculosis: negative. Very large, greenish tubular crusts present, right and left nostrils. Inferior turbinates: advanced atrophy. Middle turbinates: moderately atrophied; covered with crusts and muco-purulent discharge. Nasal passages large. Mucous membrane atrophic. Foetor: very pronounced. Sense of smell: much impaired. External nose: broad and moderately sunken. Atrophic pharyngitis; discomfort in pharynx. Moderately hypertrophied faucial and pharyngeal tonsils. Larynx: recurring attacks of acute laryngitis; no crusts present in larynx and no atrophy present. Sinuses: ethmoiditis and sphenoiditis.

Treatment. Perez vaccines, 50,000,000 to 500,000,000. Reaction: moderate swelling and redness at site of injection following first treatment. Results: no clinical improvement. Crusts present. Patient says no subjective improvement. Odor present.

Case 11. A. H., male, age 32. Diagnosis: ozena. Onset: age 17. No nasal affection immediately following birth. Measles during childhood; typhoid fever at age of 20. No history of similar nasal affection in family. No history of contact with dogs. Wassermann: negative. Tuberculosis: negative. Very large, greenish tubular crusts right and left nostrils. Inferior turbinates: advanced atrophy. Middle turbinates: not atrophic; covered with large crusts. Nasal mucous membrane dry and atrophic below middle turbinates. Foetor: present and pronounced. Sense of smell: impaired. External nose: normal. Atrophic pharyngitis; does not complain of much discomfort in pharynx. Larynx and trachea: normal. Sinuses: ethmoiditis and sphenoiditis.

Treatment: Perez vaccines, 50,000,000 to 500,000,000. Reaction: none. Results: odor present. No objective signs of improvement; large crusts present. Patient says nasal crusts more easily expelled.

Case 12. C. L., female, age 23. Diagnosis: ozena. Onset: age 19. No nasal affection immediately following birth. Measles and scarlet fever during childhood. No history of similar nasal affection in family. No history of contact with dogs or other animals. Wassermann: negative. Tuberculosis: negative. Moderate crusting, right and left nostrils. Septum moderately deviated to left. Inferior turbinates: atrophied, right more than left. Middle turbinates: not atrophied. Foetor: present. Sense of smell: not im-

paired. External nose: normal. Follicular pharyngitis. Sinuses: ethmoiditis.

Treatment. Perez vaccines, 50,000,000 to 500,000,000. Reaction: none. Results: lessened crust formation. Small thin crusts present after last injection. No odor.

Summary (*Experimental*). In experimental work, 27 rabbits were injected with cultures of Perez bacilli received from Hofer. We were unable to confirm the work of Perez and Hofer in which they state that their bacillus shows a selected affinity for the nasal mucosa. We did succeed in isolating the organism from the nasal passages of four rabbits but it must be emphasized that we never succeeded in isolating the organism from the nose save in those cases in which it was also present in the heart's blood. In none of the 27 animals used in our experiments was there any evidence of atrophy of the turbinate bodies. 24 ozena patients were examined bacteriologically, according to the method recommended by the Vienna author; all gave negative results. Agglutination tests were made from the blood of 34 ozena patients but no frank agglutination reactions were recorded. The compliment fixation reactions were likewise negative in the six cases examined.

(*Clinical.*) Age of onset: 12 (3), 10, 20, 5, 29, 6 (12), 17, 19. Constitutional diseases: Wassermann, negative in all cases. Evidence of tuberculosis: absent in 11 out of 12 cases. Inferior turbinates: atrophy in all cases. Middle turbinates: some degree of atrophy in 5 cases. Hypertrophy in 4 cases. Normal in size in 3 cases. Foetor: present and distinct in 9 cases; slight foetor in 2 cases; absent in 1 case. Sense of smell: impaired in 6 cases; not impaired in 6 cases. External nose: broad in 4 cases; normal in 8 cases. Pharynx: atrophic pharyngitis in 10 cases. Follicular pharyngitis in 2 cases. Similar nasal affection in family: in Case 5, father had atrophic rhinitis; in Case 8, one sister had atrophic rhinitis; in Case 10, mother and brother had atrophic rhinitis. In seven of the cases there was no family history of similar nasal condition. Contact with animals: Cases 5, 6, and 10 gave history of having come into contact with dogs prior to and at onset of nasal affection. Reaction following injection of vaccines: some local reaction, at site of injection, occurred in Cases 1, 2, 5, 7, 8 and 10. Increased nasal discharge followed injection in Cases 3, 6 and 8. Headache and slight malaise followed injection in Cases 3, 6, and 8. Results: some degree of improvement, subjectively or objectively, in Cases 2, 5, 6, 7, 8, and 12. No improvement in Cases 1, 3, 4. 9, 10 and 11. Crust formation: there was objective improvement in size and quantity of crusts in Cases 2 and 12. No change in crust

formation could be noted by examiner in Cases 1, 3, 4, 5, 6, 7, 8, 9, 10 and 11. In Case 2, there was a very noticeable improvement in crust formation, the crusts becoming much smaller in size and loosely attached. Case 12 showed some improvement in size of crusts but not in disappearance of crusting. Foetor: there was a disappearance of foetor in Cases 2 and 12. Improvement in Cases 5 and 8. No improvement in Cases 1, 3, 4, 7, 9, 10 and 11. In Case 6 there was no foetor present at beginning of treatment. Pharyngitis Sicca: pharyngitis sicca was present in Cases 1, 2, 3, 4, 5, 6, 7, 8, 10 and 11. Follicular pharyngitis in Cases 9 and 12. Of the 10 cases of atrophic pharyngitis, dryness and discomfort was complained of in Cases 2, 3, 4, 5, 6, 7 and 10. Subjective improvement followed treatment in Cases 2, 5, 6 and 7. No improvement in Cases 3, 4 and 10.

Conclusions: Experimentally, our work has been rather disappointing, not having been able to obtain any evidence that the bacillus as described by Perez is the cause of ozena, and we are unable to confirm the experimental work of Hofer.

Clinically, improvement was obtained subjectively and objectively in a proportion of the cases reported. There was undoubted objective improvement in crust formation in two cases. There was subjective improvement in foetor and pharyngitis sicca in a larger proportion of cases. A sufficient length of time has not elapsed since cessation of treatment to enable us to state that the improvement obtained is permanent, and it cannot be considered that a cure was effected in any case. While clinical results have been encouraging in some of our cases, we do not believe that our clinical evidence is sufficient to warrant the belief that the *Perez bacillus* is the true cause of ozena, and a review of the literature, with a comparison of our clinical results, will show that equally good results have been obtained by other investigators who have used other forms of vaccines in the treatment of ozena.

The authors wish to acknowledge their indebtedness to Dr. A. C. Rogers and his associates, Drs. Trowbridge, Finkle and Barnard, of Faribault, for courtesies extended to them.

REFERENCES.

1. Perez: *Annals de l'Inst. Pasteur*, 1899 p. 937.
2. Perez: *Berlin Klin. Woch.*, No. 52, 1913.
3. Hofer: *Berlin Klin. Woch.*, No. 52, 1913, 2413.
4. Hofer and Kofler: *Wiener Klin. Woch.*, No. 42, 1913, 1698.
5. Hofer: *Wiener Klin. Woch.*, XXVI, 1011.

619-621 Syndicate Building.

LABYRINTHINE FISTULA; OPERATION; RECOVERY.*

DR. J. L. MAYBAUM, New York City.

As fistula of the labyrinth is not an infrequent complication of chronic purulent otitis media a rather detailed history of the classical signs and symptoms presented by the following case is worthy of careful consideration.

The patient, E. S., 50 years of age, a watchman by occupation, had an acute purulent otitis media (left ear) seven years ago. This ran an uneventful course and received little or no treatment at the time. The aural discharge continued during this period and, in addition, increasing impairment of hearing in the affected ear was noted. From time to time there occurred acute exacerbations of the middle ear inflammation. Throughout this period the patient complained of occipital headaches, usually occurring on rising and lasting one hour. At no time previous to the present history did the patient complain of vertigo.

On December 15, 1914, the patient was seen by me at the Manhattan Eye, Ear and Throat Hospital. He complained of pain in the left ear, tinnitus, headache and a slight purulent discharge. Aural examination showed an injected drum and a perforation in the posterior superior quadrant. The temperature and pulse were normal. The above symptoms continued with increasing severity and the patient now also complained of distressing attacks of dizziness, which later became quite constant, occurring even in the prone position.

By January 14, 1915, the headache and dizziness had become so intense that the patient was compelled to discontinue his work and was admitted to the hospital service of Dr. Kopetzky the following day.

Functional testing on January 14, gave the following findings diagnostic of labyrinthine involvement:

Weber to the right.

Total deafness in left ear with noise apparatus in right ear.

Fistula test. Elicited on one occasion; could not be demonstrated at subsequent testing.

Spontaneous nystagmus towards the diseased (left) side.

Turning to the right—after nystagmus to the left, 15 seconds.

Turning to the left—after nystagmus to the right, 32 seconds.

Caloric test (cold water; hot water) negative after 5 minutes.

Ataxia; patient walks towards the right and shows a tendency to fall backward and to the right.

*From the Clinic of Dr. T. Passmore Berens. Manhattan Eye, Ear and Throat Hospital, New York.

Von Stein—to the right.

The above diagnostic findings, together with a typical history, established the diagnosis of acute labrinthitis with the probable presence of a fistula.

A radical mastoid operation was performed by Dr. Kopetzky on January 15 and the following findings were clearly demonstrable, confirming the diagnosis which had been previously made. Two fistulae, one located in the horizontal semicircular canal, the other in the posterior vertical canal were plainly to be seen near the junction of these canals before becoming the common ampulla.

Of further and unusual interest was the fact that the facial canal had been involved in the necrotic process resulting in the free exposure of the facial nerve.

Following the operation all the severe and annoying symptoms subsided, so that by the fourth day all evidences of labyrinthine irritation were entirely absent. Forty-eight hours after the operation a facial paralysis on the left side developed, but the condition gave no concern as it was expected because of the pathological findings present at operation. Facial paralysis has almost entirely disappeared by now. Post-operative healing ran a normal course.

By means of repeated functional labyrinthine tests, two of which are here given, I have been able to observe the gradual assumption of compensatory function of the right labyrinth and the absence of cochlear and vestibular function in the left labyrinth.

April 5, 1915.—Turning to the right—after nystagmus to the left, 4 seconds; turning to the left—after nystagmus to the right, 20 seconds. Caloric test: (cold water) left ear, no nystagmus after 5 minutes; (cold water) right ear, nystagmus after 1 minute.

May 1, 1915.—Turning to the right—after nystagmus to the left, 12 seconds; turning to the left—after nystagmus to the right, 15 seconds. Caloric test: (cold water) left ear, negative; (cold water) right ear, nystagmus after 1½ minutes. Weber to the right. Noise apparatus in the right ear, no hearing in left ear.

The points of special interest in this case are:

1. The occurrence of an acute exacerbation of a chronic purulent otitis media observed during the onset of acute labyrinthine symptoms and tested at intervals.
2. A cure without surgery applied to the labyrinth.
3. The presence of two fistulous openings into the labyrinth.
4. The observation of the gradual establishment of compensation.
5. The loss, to date, of cochlear function.

17 East Thirty-Eighth Street.

A CASE OF ABNORMAL BONE IN THE THROAT.

Dr. W. O. LaMotte, Wilmington, Del.

J. O., age 51 years, complained of his throat feeling like there were "a stick in the left side of it." He said that this trouble, together with a dry cough, had been present for eight years, that he had been treated by 29 doctors without any benefit. The last doctor he consulted, Dr. George McElfatrick, by placing his finger in the patient's throat felt something hard between the left faucial pillars and referred the patient to me.

The throat on inspection showed a slight pharyngeal catarrh and some congestion of the trachea but nothing of any importance. There was very little tonsil tissue, but under the lower third of the left tonsil could be felt a hard mass that suggested the possibility of an abnormal cornu of the hyoid. When the bone was exposed it was found to be the styloid process, one inch of which was removed. The symptoms the patient complained of immediately disappeared, except some of the cough which persisted, more or less, for several weeks.

Ford Building.

Abnormally Long Styloid Process Causing Throat Symptoms; Removal. W. S. Syme, *Jour. Laryngol., Rhinol. and Otol.*, V. 30, No. 8, p. 303, August, 1915.

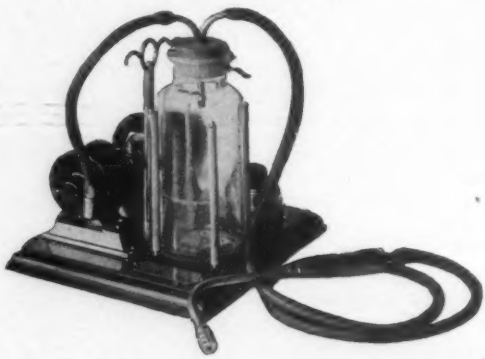
Patient a physician, 43 years old. Severe tonsillitis three years ago and has since suffered from a sensation of dragging in the left side of his throat, worse on swallowing. At times there has been slight deafness and shooting pain in the left ear. On examination with the mirror the throat appeared normal but on palpation with the finger a hard substance could be felt in the middle of the tonsil and movable with it. The tonsil was enucleated with the snare and upon examination with the finger a hard point of bone was felt beneath the sheath of the constrictor. The muscle was pressed outwards as far as possible and a portion of the styloid process, an inch in length, was broken off with the forceps. Ed.

A NEW SUCTION APPARATUS FOR NOSE, THROAT AND EAR OPERATORS.

DR. T. E. CARMODY, Denver, Colo.

This apparatus consists of a rotary pump which may be operated either as a vacuum pump or an air compressor, directly connected to a universal motor, which will run on any current of 110 volts, whether direct or alternating.

This apparatus was constructed for me for the purpose of aspirating blood and mucous in operating around the mouth, throat or nose. I find it invaluable when used in connection with tubular curettes and canulas in bone and cleft palate operations or with suction



tubes of such shape as may be desirable in operating with the bronchoscope, removing of adenoids, tonsils, etc. When used as a suction apparatus the field is kept thoroughly dry, saving considerable time over the former method of swabbing with sponges and causing much less trauma.

The apparatus can be easily adapted for pressure, so that the bottle can be partly filled with ether and an excellent ether vapor obtained without interfering with the suction.

The first machine used by me made use of a belt; it was found, however, that the belts would break or slip. The present apparatus being directly connected makes it an extremely simple device to use.

Metropolitan Building.

TONSIL ENUCLEATOR.

DR. WILLIAM D. BYRNE, Chicago.

This instrument is intended to facilitate the work of separating the tonsils from the pillars and its bed behind the pillars. In the experience of most operators, the main difficulty lies in cul-de-sac back of the pillars where one has to work more or less in the dark.

The instrument slides readily between the anterior pillar and the tonsil and quickly separates the latter from its bed; as the separation

proceeds, the instrument is pushed backward, separating the posterior pillar in the same way, when the tonsil may then be removed with scissors, knife or snare at the option of the surgeon.

Readers shall observe that the blade is of concavo-convex design, a separator rather than a dissector, hence the minimum of risk from hemorrhage is involved in its use.

TONSIL VOLSELLUM.

This cut represents a volsellum forceps fashioned along the lines of the Ballenger instrument; it, however, is bent at a sharper angle, one of 45°, also the bite is broader, measuring 9 mm. across, thus

giving the operator a better hold on the tonsil, hence should the distal and central tooth pull out of the tonsil, the proximal will hold firmly or vice versa.

The central tooth also is advanced ½ mm., thus giving the bite a crescent curve which carries it into deeper and healthier tissue.

153 West Sixty-ninth Street.

SOCIETY PROCEEDINGS.

ABSTRACT OF THE REPORT OF THE SCIENTIFIC PROCEEDINGS OF THE THIRTY-SEVENTH ANNUAL CONGRESS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

HELD IN NIAGARA FALLS, CANADA, JUNE 1, 2, 3, 1915.

DR. EMIL MAYER, ABSTRACT EDITOR, NEW YORK.

SYMPOSIUM.

THE CONSIDERATION OF PANSINUITIS EXCLUSIVE OF EXTERNAL OPERATIONS.

The Etiology of Pansinuitis. DR. J. GORDON WILSON, CHICAGO.

(To be published in full in a subsequent issue of THE LARYNGOSCOPE*).*

The Nonoperative Treatment of the Accessory Sinuses. DR. LEWIS A. COFFIN, NEW YORK CITY.

(To be published in full in a subsequent issue of THE LARYNGOSCOPE*).*

Observations Upon the Intranasal Exenteration of the Ethmoidal Labyrinth in Pansinuitis. DR. HARRIS P. MOSHER, BOSTON.

The speaker detailed the fundamental points in the anatomy of the ethmoidal labyrinth, describing the anterior cells, the nasofrontal duct, the unciform cell, the posterior ethmoidal cells and the superior nasal spine.

After mentioning Hajek's and Ballenger's operation, he then described his own method, as follows:

The anterior end of the middle turbinate is first removed. The initial plunge of the curette into the ethmoidal labyrinth is best made by disregarding the agger nasi cell if it is present and going higher on the superior overhang—that is, the extreme upper part of the middle turbinate and a little further backward. If the curette does not readily break into the labyrinth, it should be carried a little higher and a little further back. Finding this point may bother the beginner. Once in the labyrinth the curette is turned and swept forward until it strikes the posterior surface of the ascending process of the superior maxilla. Then it is turned so that it faces posteriorly, and by backward and downward sweeps the unciform process, the ethmoidal bulla and its cells are opened. The cavity so made in the anterior part of the ethmoidal labyrinth is cleared of fragments by using a small round tonsil punch. The operator is now ready to probe for the nasofrontal duct and to enlarge it by sounds, rasps and bur.

In a great majority of instances the ascending process of the superior maxilla is a guide to the nasofrontal duct so that a probe slipped upward along its posterior border finds the sinus. In the small percentage of cases where this fails the duct can be found by carrying the probe backward to the limit of the roof of the operated cavity and then bringing it

forward with the point turned outward. Only as a last resort should the point be turned inward.

The second part of the operation: The head of the patient is held so that the cribriform plate is level, and it is kept so. The curette is now plunged through the attachment of the middle turbinate and carried backward to the outside of the middle and superior turbinates to the front wall of the sphenoidal sinus. This is firm and stops the instrument with a dull and sometimes with a sickening thud. The face of the curette is now turned downward and the bowl and shaft forced through the bottom of the ethmoidal labyrinth. This generally leaves the posterior half of the middle turbinate dislocated and hanging. The middle is removed by snare or conchotome.

The lower two-thirds of the inner wall have now been removed. The upper third of this wall is left as a prominent anteroposterior ridge, composed in front of the middle turbinate and behind of the superior turbinate. As much of the turbinate ridge as possible should be removed. The amount of the ridge left at the end of the operation determines the thoroughness of the exenteration. Whenever there is an appreciable ridge left there is a chance to remove the inner wall of one or more of the posterior cells. It is especially important to get this remaining portion of the inner wall of the labyrinth removed posteriorly, in order to do away with the inward bulging of the labyrinth which so obscures the nasal face of the front wall of the sphenoidal sinus. For this purpose the round tonsil punch is very convenient. The sinus is now evulsed or laid bare as needed. Finally, the inner surface of the os planum is curetted from behind forward. Packing over night is advisable.

The writer does not consider that an ethmoidal case is ever free from the liability of a recurrence.

While the writer has had no deaths, such have been recorded, and there is always danger in ethmoidal operating.

The method of removal of the nasal spine appeals to the writer, provided the anterior ethmoidal cells are dealt with at the same time.

In all chronic cases of antral disease the writer prefers opening the canine fossa to the intranasal route.

The Frontal Sinus—Opening It Through the Nose. DR. OTTO T. FREER, CHICAGO.

(To be published in full in a subsequent issue of THE LARYNGOSCOPE*).*

Two Cases of Chronic Pansinuitis Associated With Systemic Infection. DR. GEORGE E. SHAMBAUGH, CHICAGO.

Both cases occurred in young women. One case was caused by a diseased tooth; the cause of the other case is not clear. In both, every accessory sinus on both sides was involved. Intranasal operations succeeded in curing the infection in all the sinuses except the frontal sinuses in one case, while in the other even the frontal sinuses are apparently healed. In one case an attack of acute articular rheumatism occurred, apparently from the focus in the sinuses. The opening of a large posterior ethmoid cell and the neighboring sphenoid sinus was followed by a disappearance of the rheumatism. In the other case a severe chronic arthritis, involving every joint in the body, occurred as the result of a

severe acute articular rheumatism which followed an acute exacerbation of the long-standing sinuitis. This case was subject to recurring attacks of acute exacerbations, associated with fever and increased pain in the joints, until by persistent efforts apparently the last focus of pus in the sinuses was drained. Since the sinuitis has been cured there has been an absence of acute exacerbations, but the inflammatory process in the joints is undergoing fibrous changes, resulting in increased rigidity of the joints.

DISCUSSION ON SYMPOSIUM ON PANSINUITIS.

DR. HARMON SMITH, New York City: I have here an instrument which bears on the treatment of the conditions under discussion. It works along the line of creating a vacuum, and, while there is a vacuum, lactic acid bacilli are injected. The syringe is loaded with lactic acid bacilli in a solution of argyrol, enzymol, or any other preparation. By means of the syringe the solution is forced into the sinus. A bicycle pump may be employed to create the vacuum. The instrument can be used at home, and should be employed two or three times a day. Subacute and chronic cases have all improved under this method of treatment.

DR. THOMAS HUBBARD, Toledo: Referring to Dr. Coffin's method, I have one criticism to offer concerning the actual amount of negative pressure used. The statement that he used so many pounds of negative pressure is absolutely incorrect, because the mucosa will stand not more than four or five pounds. This can be determined exactly if measured by a manometer. Three or four pounds is my experience. There is more or less hemorrhage from five pounds of negative pressure.

DR. HENRY L. SWAIN, New Haven, Conn.: The idea of Dr. Wilson's paper is in line with what I have always held. If the ciliated membrane of the cells can be preserved, better results will be obtained than would otherwise be possible. The less the traumatism the better.

I had the pleasure of seeing two of the cases mentioned by Dr. Coffin, and the exhibition of the method on the patient. I learned a great deal from the demonstration. I saw him treat a man into whose nose I could easily see. The patient had lost his septum and it was possible to see into the sphenoid sinus. Everything was very open and apparently clear. I could see no secretion at all, yet Dr. Coffin got out a tube half full of secretion. It was not only serous matter, but pus as well, and was colored with iodin which had been introduced two or three days before. In the case of the woman there was some pus along the floor. This was all sucked out. At the present time the right side of the face transilluminates better than the left. The effect of the Bulgarian bacillus will be proved by time. The applicability of the apparatus has been demonstrated.

I was called upon to treat a case of acute antrum disease in a man who had a round opening in his septum. By going in on the opposite side I could use small tubes or probes, and could flush out the antrum through the natural opening. I could look in through one nostril, put the tube in, and flush out perfectly well.

DR. JOHN F. BARNHILL, Indianapolis: Two years ago I saw Dr. Mosher's specimens and his method of operating at that time, and I have employed the method since, with very good results. The limitations can

be well marked out, and that is what makes Dr. Mosher's method safer than some of the others. The Ballenger operation is dangerous unless the bone is soft. Where the bone has been softened by the polypoid masses, and where the cells are filled with polypi, the Ballenger method is excellent. Until the posterior retaining wall is reached the operator is within the field of safety. So, then, we are working within a bony capsule, the limitations of which, unless too diseased, will give the sensation of where we are working. In the absence of these limitations the Ballenger knife is useful.

DR. CHARLES W. RICHARDSON, Washington: In the Mosher operation I have met with one complication, which I am surprised that others have not met—the possibility of entering the antrum. There is danger unless one is very cautious in making the downward stroke.

DR. E. FLETCHER INGALS, Chicago: The Mosher operation for the ethmoid seems to me in every way desirable. However, it has not appealed to me to leave the middle turbinated body until the end, unless the posterior cells are also involved. I prefer to take off the anterior portion of the middle turbinate, as it gives a better view. In acute cases of frontal sinuitis the Mosher method is admirable for opening up the sinus.

The intranasal method of opening the frontal sinus which I devised several years ago has answered my purpose better than any of the methods described, giving ninety per cent better results in chronic suppurative frontal sinuitis. In acute cases I cannot get the probe in. The instrument which I use is six millimeters in diameter. I have had four or five cases in which I could not pass it the whole distance. I would get in half way, and be unable to go farther; I would then pass in the bur. The probe prevents one from doing any harm. If it is merely the frontal sinus that is diseased, this method gives all the opening that is necessary. In ninety per cent of the cases the patients get well just as rapidly as they would from any of the more severe operations. There is no use, as a rule, in making an opening of more than two millimeters in diameter.

DR. LEWIS A. COFFIN, New York City: I employ a method modified somewhat after that of Mosher. He goes in with a curette, I go in with a chisel. I know by a slight tap whether I am on solid ground. There is a big safety space of about half an inch. I make an up-an-down incision with the chisel, then bear upward toward the median line, and at that point introduce Luc's forceps. I take out all I can. Three bites and I am looking into the sphenoid. There is very little hemorrhage. I have never had to pack a case. It may be necessary to clean up with angular forceps and curette, but to me this is the easiest way.

DR. WILLIAM E. CASSELBERRY, Chicago: In the earlier years I employed the Hajek method; of late I have adopted various methods. I have followed Mosher's plan, and I have used Coffin's method, except that in all these methods I first remove the anterior end of the middle turbinated body. That which is left of the turbinal is sufficient as a guide, without having the anterior end in the line of the light and shutting off the view. It has been stated by Watson Williams and others that the upper wall is so rich in lymphatics and blood vessels that there is danger of the communication of sepsis to the brain. That statement has deterred me

several times from making my operation as complete and thorough as I wanted to make it in order to enter the sphenoid. I have also found this turbinal plate very hard and difficult to get through. In certain instances I have felt it almost impossible to get down on a level with the sphenoid wall in order to do the classical Hajek operation and the Mosher operation. I have thus been obliged to leave quite a ridge projecting down.

DR. WILSON, closing the discussion: We do not know much about the lymphatics of the upper part of the nose; most of our knowledge is theoretic. If we inject the subarachnoid space of the brain we can pass dye into the olfactory nerve. We know that the olfactory nerve is surrounded by lymphatics, but we do not know that by injuring the olfactory nerve we will communicate sepsis to the brain. Anatomists teach that it is dangerous to subject the olfactory nerves which come out from the cribriform plate to injury; further than that they do not know.

DR. COFFIN, closing the discussion: Answering Dr. Hubbard's remarks about the amount of pressure: the gauge is graduated, but how I do not know.

DR. MOSHER, closing the discussion: I am sorry to have added to the nomenclature, but the term agger nasi seems to me to be better for the cell at the ensiform curve than lacrimal or infundibular.

The selection of a method of operating upon the ethmoidal labyrinth is a personal matter. The danger of working in the extreme upper and anterior part of the middle turbinal has been mentioned by Watson, and also by Freer. The higher one goes the greater the danger. Two patients died from meningitis, as I said in the paper.

I do not see why the rasp is more dangerous than the bur.

For the last year I have removed the anterior end of the middle turbinal, as a routine procedure.

As to opening the antrum, as suggested by Dr. Richardson: The amount of overhang varies greatly. In extreme cases the overhang in front is great. In many cases of frontal sinuitis the antrum is already infected. One also runs the risk of infecting it by taking off the unciform process, as the inner wall of the antrum is opened as soon as this is removed.

DR. OTTO T. FREER, Chicago: Quite a number of years ago Holbrook Curtis gave a description of an intranasal antrum operation in which he used trephine and bur. I modified this operation. In the course of ten years I have had unvarying success in opening with the trephine and bur. I have had complete recovery in some sixty cases of antral suppuration. Most of them got well as soon as there was an opening in the lower meatus. It is not always necessary to resect the anterior turbinated body. The trouble with the Ingals operation is that you get a beautiful opening at first, with a tendency to contraction. Whether I use the Ingals bur or another method, I think his tube may be a valuable aid in keeping an opening.

Referring to Hajek's operation, it cannot be denied that he has done a large amount of work since 1905. He has enough cases now to speak authoritatively. He has another flap operation which should be studied. He objects to the rasp on account of the danger of breaking down every-

thing and inducing meningitis. He works with a bur, which I have used and have found to be a safe instrument. Hajek is absolutely right in regard to his bur. The cutting forward is apt to be followed by contraction. I did not object to the term agger nasi cell, but I did object to the term uncinate cell.

DR. GEORGE E. SHAMBAUGH, Chicago: The question raised by Dr. Casselberry with reference to the danger of setting up meningitis holds if the wrong method is followed in operating upon the ethmoid. Taking the whole mesial plate of the ethmoid, and pulling and tearing off pieces, will lead to extension which will eventuate in meningitis. That should be left alone, and work be confined to the labyrinth. The labyrinth itself has no communication with the intradural space.

As to the use of the rasp: I do not push and pull down, but use it gently. Used properly, it is not a dangerous instrument.

It is unfortunate when everybody tries to use different terms for the same anatomic structure. Most anatomic terms are fixed by the anatomic nomenclature. The term "infundibulum" is used incorrectly. "Infundibulum ethmoidalæ" is the term used by the Nomenclature Congress at Basle.

Another term which we have been using wrongly throughout this discussion is the synonym for inflammation of the sinus—"sinuitis," which has been incorrectly called "sinusitis." We might as well get into the habit of using correct terms.

Tonsillectomy in the Adult—Are We Justified in Doing so Many Indiscriminate Tonsillectomies for Remote Infections? DR. CHARLES W. RICHARDSON, WASHINGTON, D. C.

(Published in full in the May issue of THE LARYNGOSCOPE.)

DISCUSSION

DR. HENRY L. SWAIN, New Haven: The ideal way is for the general practitioner to send patients to us to ask if the tonsils should be removed, but most of us are confronted with the exactly opposite condition. The nurse, the relatives, or others will send a patient to the hosiptal "to have the tonsils removed." Some tonsils certainly do not need to be removed. Tonsillectomy is undoubtedly performed in many cases in which it is not needed; that is wrong. Any method which will lead to some way of estimating quickly and accurately as to whether a tonsil should or should not come out would be of tremendous advantage.

DR. G. HUDSON MAKUEN, Philadlephia: I have had several letters from Dr. French concerning his work. He promises to bring this subject before us at our next meeting in Washington. He is now able to tell whether or not a tonsil is diseased. He thinks he will be able to look in the mouth and tell whether or not pus or detritus of any sort is there, and whether or not it should be removed. It is not a question of whether or not the tonsil should be removed, but what should be done; it is a question of the prevention of the trouble, just as the prevention of sinuitis is advocated. The cases of which I am proudest are those in which I have done the least operation. When pus is found in the crypt it is possible to cauterize the edges of the crypt, to open and drain, without trying to do an extracapsular, intracapsular or any other kind of an operation for tonsillectomy. Some of these cases are inoperable, and it is far better to give good drainage and to remove the possibility of

infection. I think that can be done in a great many cases, and radical surgery thus be avoided.

Dr. William E. Casselberry, Chicago: I cannot say that I feel thoroughly in sympathy with the point of view presented. It goes without saying that we should not remove tonsils which we are sure are healthy and which will not give rise to systemic infection. It goes equally without saying that we should remove those which are harmful. I am unable to assure the internist that the tonsils are not the source of systemic infection, even after I have evulsed the pillars and have explored every repository of infection, because the tonsil is a sponge, and may be still the source of infection after such exploration. Many times when the internist sends us a patient for examination of the tonsil, and we find no infection there, we should look elsewhere for the source of the trouble; we should look above. There are ten cavities just above. Sinus suppuration is exceedingly common, and is not infrequently the primary source of infection in the tonsil itself. If we remove the tonsil we are still not sure that we have removed the source of infection. Our duty to the internist is to find the source of infection if it is not in the tonsil.

Dr. Thomas Hubbard, Toledo: Dr. Casselberry's remarks about finding the source of infection applies to the teeth. Given a case of some form of systemic infection, probably of focal origin, it will be our first duty to prove that the tonsil is or is not diseased, and then to find the real source. The method followed is extremely interesting. Dr. Price of Cleveland is able to study the condition of the peridental tissues, and, by culture of the various bacteria obtained, to tell the influence upon the system. In this way he has been able to exclude certain teeth and to find the diseased root which is the source of the active organism. In doubtful cases, where there is objection to operation, we should be able, by some such method, to tell whether the tonsil is the source of infection.

Dr. Hanau W. Loeb, St. Louis: It is easy enough to exclude the teeth, or pyorrhea, or a small abscess at the roots; but it is not easy to tell when the tonsil is at fault. In a case of rheumatoid arthritis, getting worse for one, two, or three years, in which repeated examination revealed nothing, and in which the tonsils are not specially large, would you leave those tonsils? I have recently had such a case of rheumatoid arthritis, examined by various internists without result. I removed the tonsils, made a vaccine after the mthod of Rosenau, used it, and the patient got better immediately. Because the danger of increasing the pathologic process by a single attack of mild tonsillitis is so great, I think we are justified in removing the tonsils, providing, of course, the age and the general condition of the patient permit. While we should not remove tonsils indiscriminately, in the presence of disease which cannot be otherwise located we are justified in removing them.

The appendix and the tonsil are very closely related as to structure. The fact that removal of the appendix was followed by cure of the rheumatoid arthritis does not necessarily mean that the tonsils should not be removed.

Dr. James E. Logan, Kansas City: Nothing has been said of one source of infection which to my mind is very important—the vault of the pharynx. I think many infections come from failure to appreciate a condition in the vault of the pharynx which is there by reason of neg-

lect of inflamed or degenerated adenoid tissue, possibly, a constant source of irritation. If we will clear out these vaults, clean out this adenomatous, fibroid or lymphoid tissue, we will get rid of many cases of systemic infection.

DR. GEORGE E. SHAMBAUGH, Chicago: The word indiscriminate would exclude all discussion, because no one believes in removing tonsils indiscriminately. However, the whole subject of removing tonsils for systemic infection is very important. The question of focal infection in systemic disease is much better appreciated by internists than by specialists. One of the most important chapters in medicine is the relationship of focal infection to systemic disease. Not only these rheumatic conditions, but Bright's disease, chronic neuritis, enlargement of the thyroid, appendicitis, have been traced definitely to tonsillar infection. At the Presbyterian Hospital, in Chicago, where most of this work has been done, it has been found that there is a distinct relationship between appendicitis. and tonsillitis. Duodenal ulcer, also, often results from focal infection. It is not always the tonsil, however, that is the source of the focal infection. Pus taken from focal infection anywhere else, injected into a guinea pig, will produce gastric ulcer. The infection is produced through some selective action. We are now merely on the threshold of this entire subject. These questions should not be worked out in an isolated way, by dentists, by nose and throat specialists, or others, but by all together.

The question is, how accurately can we tell when the tonsil is at fault? My opinion is that in most cases we can tell pretty accurately. One way of telling is by the history. If a patient has had an attack of rheumatism following an attack of tonsillitis, there is good reason to believe there is an association between the two. I would not take the risk of another attack of tonsillitis in a case of endocarditis. Many patients deny having had sore throat, and in many cases it is possible to find pus in the tonsils of patients who have never had tonsillitis. If we are not able to demonstrate any positive evidence of the tonsil being the source of infection, can we exclude the possibility of its being so? Before removing the tonsils in such cases I want a capable internist to go over the case; if he cannot find any focus, the tonsil is the most suspicious source. I may cite an illustrative case. A woman, of perhaps fifty years of age, consulted me two and a half years ago, saying, "I have neuritis in my right arm; I want you to take my tonsils out." I asked her why she thought she had tonsillitis. "Some of my neighbors," she said, "have rheumatism, have had their tonsils taken out, and are better." She was under the care of Dr. Billings, and I sent her back to him. She came back after a week, saying he said take the tonsils out. I could express nothing from the tonsils. In removing one of the tonsils I opened an abscess. The patient got well of the neuritis. Another case in point was that of a physician who had had rheumatic fever for several years, an attack every year. He had had five attacks of tonsillitis. The internist could find no other source of infection. The man was seventy-one years old, and did not want to have his tonsils removed. He continued to have the attacks of rheumatic fever. I finally took out his tonsils, but he was not improved. It was then found out that he had an urethral abscess; treatment of this cured the rheumatism.

DR. OTTO T. FREER, Chicago: Why should the internist be the one to make these examinations? He can examine the chest, the abdomen, etc., but he is not the one to examine the nostrils. There has been a slaughter of the innocent in this matter, with the general practitioner taking out tonsils. I agree that the tonsil is apt to be the source of infection, but the pharyngeal tonsil, as Dr. Logan has said, is more often the source of the trouble than the faucial tonsil. The lymphatics usually tell the story of focal infection. If I find no lymphatics involved, I am not inclined to consider the tonsil the cause of the infection.

DR. SHAMBAUGH, continuing the discussion. The internist is the one to help the patient to get the problem threshed out. Glandular infection has nothing to do with systemic infection.

DR. GREENFIELD SLUDER, St. Louis: It seems to me that there are two problems, the solution of which will eventually clear up the question; first, the physiology of the tonsil; second, the perfection of Dr. French's work. The tonsil takes up what is put upon its surface very readily, this is quickly absorbed, and is thrown into the system beyond the tonsil.

DR. RICHARDSON, closing the discussion: After giving the title of this paper to the secretary last winter I was sorry several times that I had done so, because the more I thought of it the more I realized how difficult it would be to discuss the subject without incurring the ill will of one faction or another.

DR. CASSELBERRY agreed with me most thoroughly, without intending to do so. I am glad that Dr. French's work bids fair to solve the problem. Dr. Shambaugh has emphasized one point that I tried to bring out—that there are other points of focal infection besides the tonsil. It is our duty to be able to elicit these for the internist. Dr. Logan has called attention to the fact that there may be crypts in the pharyngeal tonsil which are as much diseased as the crypts in the faucial tonsil, and which are as apt to cause systemic infection. I recall a case, sent me by an internist, in which the patient asked me to look in her right ear. I did so, and found a chronic suppuration, which she said began when she was fourteen years old, following scarlet fever. She was then twenty-six. She had beginning rheumatoid arthritis. I did a radical operation on the ear, but did not touch the tonsils. She is well and working.

We must conscientiously go into these cases, examine the ears, the sinuses, the vault of the pharynx, the teeth, and note whether these will help us in the study. It is not only rheumatoid arthritis, but all the other forms of infection, that may be due to these focal lesions. In cases which cannot be made out thoroughly, even if the tonsils do seem to be infected, one must be on the lookout for syphilis and latent tuberculosis.

Effects of Protein Extracts from Fruits and Pollen on the Upper Air Tract. DR. WALTER F. CHAPPELL, NEW YORK CITY.

The writer has recognized for some years that some people suffered from a variety of local irritations of the mucous membrane of the upper air tract and external auditory canal, which were attributable to eating certain fruits or drinking certain wines.

In the early summer cases of pharyngitis and laryngitis were classed as strawberry throats; in the autumn as cider and grape throats, and an occasional tomato throat. In addition, pain, tenderness and swelling of the external auditory canal were traceable to eating apples and drinking cider. Occasionally an acute sneezing, accompanied by discharge and swelling of the mucous membrane of the nasal passages, followed eating quantities of grapes or drinking claret or similar red wines. In a few instances these symptoms were attended by swelling and burning sensations of the tongue and lips. There are children who have stuffy noses, constant colds, pharyngitis and croup due to the nature of the food they take.

Raw apples cause the greatest trouble, but when one is anaphylactic to one fruit he may be to several others.

Cooking these fruits greatly modifies their effect, but even then if taken in large quantities and continued for some time, they still produce irritations of a milder degree.

Believing that the protein extracts of fruits might be the cause of these conditions, protein extracts of apple, strawberry, grape fruit and tomato were made for the writer, and applied to five people known to be anaphylactic to apples, strawberries and to tomatoes, while a sixth person was used as control.

Terrific reaction followed the injection of one minim subcutaneously of apple protein extract of a 1 to 60,000 strength, with a drop on a small abraded surface. Local reaction only occurred in the second case, as also in the third case. Severe reaction followed the local application of the strawberry protein in the fourth case, and only some redness followed the intracutanetous injection of the tomato extract in the fifth case.

In hay fever cases the writer has seen much benefit follow the internal administration of cinchonidia sulphat, but he has seen no permanent cures following this treatment.

The laboratory reports are also presented.

Pollen Therapy in Hay Fever. DR. J. L. GOODALE, BOSTON, MASS.

Methods of gathering and preserving plant pollens are discussed. A fourteen per cent solution of alcohol was found to preserve the pollen extract for several months. When hay fever patients receive an application of the exciting pollen to a scratch of the skin, a definite reaction occurs, consisting of œdema, hyperemia and itching. The application of this test enables us to determine the special causative plants for each case. The intensity of these skin manifestations may be sensibly diminished by the repeated parenteral administration of the proteids in question. Coincident with the diminution in skin reaction there seems to occur an increased tolerance of the exposed mucous membrane to the pollens of the plants employed. Pollen therapy in hay fever may be regarded at the present time as a promising method of treatment, but its value and the permanence of its results remain still to be definitely established.

Serobiologic methods have shown the phylogenetic relationship of the different plant orders and families. The application of these discoveries to the treatment of hay fever by injection of plant proteids promises to assist in the selection of the specific material required for a given case.

DISCUSSION ON PAPERS OF DR. CHAPPELL AND DR. GOODALE.

DR. BURT R. SHURLEY, Detroit: I have been extremely interested in the working out of the question of sensitization to the pollens of ragweed and goldenrod, which are the only pollens I have been able to secure. The whole question of anaphylaxis and sensitization has been explained by Vaughan, of Ann Arbor, by the splitting of the proteids and the elaboration of toxins, ptomaine and leucomains. His theory is very rational. He has shown that egg white will kill a guinea pig in a short time. A toxic dose after the ninth day is fatal.

A number of Dr. Goodale's observations I have been able to confirm as I have worked along. If the dosage is run too high the depression is great, resulting, perhaps from the exhilaration of the toxin.

One laboratory has turned out, from the clinical standpoint, practically all the pollen toxins which can be used in hay fever. Fifteen doses, in ascending scale, may be found in the market. The clinical value of this I do not know, but it is claimed that fifty per cent of hay fever patients are absolutely protected during the hay fever season.

DR. EMIL MAYER, New York City: The question of standardization is very important. Standard solutions, not stock solutions, should be employed. Standardization can be done and must be done, just as is the case with the pharmacopeia, in which a fluid extract represents so many grains. For this reason I resent the rushing in of a chemical firm and the presenting of a stock pollen. The work presented to-day is very gratifying.

DR. HARMON SMITH, New York City: The first patient mentioned by Dr. Chappell was a patient of mine, suffering from what I thought was eczema of the external ear, of uric acid origin. Since he was under my care he went to Dr. Chappell. He was a large man, of fine physical stature, weighing over one hundred and eighty pounds, and not at all neurotic. When I saw him he had a large welt on the arm, extending around about two-thirds of the arm. He was very sick, giving every evidence of great physical depression. The doctor mentioned in this paper I also knew very well. His reaction from the strawberry I am sure was produced absolutely by the protein in the fruit.

DR. MAX A. GOLDSTEIN, St. Louis: These reports convince us that we have been working in the dark for the last few years. Animal proteids, vegetable proteids, and the whole series and ramifications of proteid substances and their anaphylactic reactions, will have to be reduced to a system before any practical clinical work will be accomplished in hay fever. Standardization is necessary for practical purposes. Unless we can reach a more definite and limited basis we will never see the end of this tremendous field.

I have in mind the wife of a physician, an internist of unusual standing, who has used calcium salts for the second season, with no practical results as yet.

DR. GOODALE, closing the discussion: I wish to express my disapproval of the procedure which has been brought forward by the chemical firm, of what might be called a shotgun prescription for hay fever. As I understand it, it is to be used in the majority of cases of hay fever. It is possible that in a patient with one sensitization, by injecting this stock product another sensitization may be given.

Fluoroscopic Bronchoscopy. (Supplemental Report.) DR. E. FLETCHER INGALS, CHICAGO.

The fluoroscope is of much value in the hands of the well-qualified bronchoscopist. Its use will lessen the danger and decrease the number of failures where its use is indicated. It is of especial value where there is so much mucous, pus or blood that it is very difficult or impossible to see the foreign body, or where granulation tissue covers the foreign body; where there is an abscess cavity in which the foreign body is hidden; where a stricture has formed, and in difficult cases in which the body is lodged in a bronchus going to the upper lobe of the lung, or in any bronchus where it cannot be exposed by the ordinary methods.

It is better not to use any anesthetic, and a narrow, strong forceps that will hold is specially important.

The surgeon standing at the left side of the patient's head and holding the bronchoscope, which was previously introduced to the foreign body, directs it by the shadow to the foreign body. The forceps is guided to the foreign body by the shadow, and the blades are opened and the forceps passed a little farther so as to grasp the foreign body.

Considerable traction may be required to draw the body through the stricture. Two cases are reported to further illustrate the utility of the method.

Report of a Foreign body in the Lung, the Primary Diagnosis of Which Was Made by a Blood Examination—Removal—Recovery. DR. GEORGE L. RICHARDS, FALL RIVER.

Male, twenty-five years of age, had occasional attacks of asthmatic breathing, bronchitis and chills from some time in early childhood.

It struck the writer as being peculiar that a young man should have occasional attacks of chest pain, occasional attacks of chills and fever of very short duration with only a suggestion of a cough, but with a moderate, steady leucocytosis and with no definite physical signs.

It suddenly dawned on the writer that these symptoms were suggestive of a foreign body in the bronchus, and that all the symptoms might be thus occasioned.

A Roentgen examination disclosed a tack in the right bronchus. There is no history as to when the tack entered the lung.

Dr. Chevalier Jackson, after previous administration of morphin and atropin under cocain anesthesia, and with the aid of the upper lobe bronchus forceps, after dilatation of the strictured bronchus, removed the head of the tack; the point was not forthcoming. The head was much eroded and oxidized. At no time could the tack be seen by direct inspection.

No reaction followed, and no chill or other further trouble with the lung has occurred since.

Foreign bodies which have been in the lung a long time and are unsuspected are probably far more common than any of us have yet ascertained.

DISCUSSION OF PAPERS OF DR. INGALS AND DR. RICHARDS.

DR. ROBERT CLYDE LYNCH, New Orleans: I have here one of the first changes made in the Killian suspension apparatus. It allows for the movement of the horizontal tooth plate about an inch instead of a quarter

of an inch, as with the Killian model. One of the great disadvantages of this was that the platform projected into the mouth, interfering with the view. In order to get rid of these disadvantages I constructed an apparatus which has a vertical movement. It allows the opening of the mouth, with nothing to obstruct the view. The principle was found to be entirely wrong; in other words, the center of gravity was found to be to the side of the middle, and the head would pull over to one side. This is shown merely as one of the mistakes made in the development of my apparatus.

The last improvement so far has served very well under all circumstances to which it has been applied. Most of my dissection work has been done in adults, who require more motion than children. It must be made flexible, and must have motion in excess of what is usually necessary. First of all, the base which supports the tongue spatula is extremely heavy and will not bend under any circumstances. I have suspended patients weighing as much as two hundred and fifty pounds. Again, it will open in the vertical direction two inches, which is in excess of that given by other methods. It has another motion not obtained before. It also has a separable tooth plate. I now use two tooth plates, which will fit on in this fashion (demonstrating). This has the advantage of giving two points of fixation as against one. When the upper jaw is fixed against these two points it is prevented from moving from side to side. The double ring keeps the instrument in the center of gravity. In some cases where the patient is under suspension this screw will jam. In order to prevent that I have had a nut drilled and have a little handle which can be used to jack it up, just as you would use an automobile jack.

The spatula, which has given a good deal of trouble in keeping the tongue in shape, is constructed in my apparatus much on the pattern of the last Killian model. The wings are flexible; with it the sides of the tongue can be lifted up and kept flat. The handle, in other models, was hard to sterilize, so I have constructed one which is made of hard steel, so that it will not bend under the most trying circumstances. It is rough on the back, so that it will not slip. The point tips up a little, the wings are fixed. It shows the anterior commissure much better than is possible with the older models. The instrument is introduced closed.

Dr. Harmon Smith, New York City: Dr. Ingals' method of locating and extracting foreign bodies recalls an unfortunate case which I saw in consultation. The patient, a man, had inhaled a hand dental bur, which consisted of an aluminum handle and bur. The dentist had dropped this instrument on the patient's tongue, turned around to t[illegible] up another instrument, and during this time the man inhaled the bur. He was advised to have an X-ray taken. He went to a business meeting downtown, and afterwards had the X-ray taken. This showed the foreign body in the left upper lobe bronchus, high up. He then consulted an expert bronchoscopist, who worked an hour trying to extract the body. He failed. I was then consulted. I worked at it, but could not get into the bronchus. Another laryngologist was called in, who has extracted foreign bodies under similar circumstances, but could not extract this one. Dr. Jackson was telegraphed for, and came, bringing his own in-

struments and assistants. He worked an hour or more, but was defeated. It then became necessary to remove a part of the man's lung. He was an old man, and died subsequently from the shock. It was impossible to turn the corner to get the foreign body in the ascending bronchus of the left lobe.

DR. THOMAS HUBBARD, Toledo: Dr. Ingals' remarks with reference to the liability of the indiscriminate application of the fluoroscopic method of examination are very timely. In a case recently under my observation the method was tried in removing a tack from the right lung. The tube was passed far enough down to reach the tack and turn it over. A very skillful fluoroscopist was assisting, the operation was prolonged for some time, and every effort made to extract the tack, but it was impacted by the method. It had been turned crosswise and had to be straightened out by a hook.

There is always danger to the fluoroscopist in these prolonged operations. The man whom I had has already lost one finger from epithelioma. There is also danger to the patient.

Sometimes foreign bodies become encysted. I recall a case in which a boy swallowed a nail. Several good diagnosticians went over him very carefully, but could not locate the nail. It was finally located by means of the X-ray, and proved to be an eight-penny nail, which was encysted. There were no symptoms from this foreign body. If the patient is conscious, he will often aid in telling whether we have gotten the foreign body. The finger-thumb action of the forceps is more delicate and positive than the grip with the hand. The action of the Ingals forceps is too stiff.

DR. JOHN F. BARNHILL, Indianapolis: I would like to ask Dr. Ingals to state his method of watching the end of the fluoroscopic forceps—whether an assistant, the fluoroscopist, or he himself watches the end of the instrument; also whether there is any danger of grasping the lung in getting through a spot where there is an abscess.

In the lay press, in all accounts of foreign bodies getting into the lung, the writer always says the patient swallowed a foreign body. Dr. Richards used the same term in his paper. Is it not aspirated or inspired?

DR. WILLIAM E. CASSELBERRY, Chicago: I would like to ask Dr. Ingals the arrangement of the table, and whether a specially constructed table is required; also whether the fluoroscope as ordinarily used is adaptable for the purpose.

DR. ROBERT CLYDE LYNCH, New Orleans: I recall a case in which a nail was in the lower lobe bronchus. I had made a canvas cot, on a trellis, and put the X-ray tube under this. I directed the forceps from two points of view. To be sure I was in the line of the right bronchus, after getting the tube so that it actually touched the nail, the patient was swung over on his side, and an anterolateral view obtained. The nail was extracted without difficulty.

DR. INGALS, closing the discussion: Dr. Richards spoke of the tack itself coming away piecemeal, or having been oxidized. I had an experience with a much larger nail which had been in a boy's lung for eight years. It appeared two or three times larger than it was. I got nothing but the head; the rest came up as a lot of black fluid.

I watch the forceps myself. In operating from the head of the patient I can look over and see. You cannot do this with someone to direct you how to move it.

It is on account of the danger of puncturing the lung that I caution gentleness. If you use enough force you can easily puncture the lung, but it is not at all necessary.

I understand perfectly the danger of prolonged fluoroscopy, and that is why I said one should always have an expert fluoroscopist. The light should not be turned on more than a half minute at a time. The operation should certainly not be prolonged excessively.

I use specially arranged tables so that the light can be placed wherever I want it. Sometimes it is necessary to have a simple board made which raises the ordinary table found in the hospitals.

This method should not be employed whenever a patient has a foreign body in the lungs; it should be the last resort. The foreign body should be found and removed by other methods, if possible. When the operation can be done under inspection it is much better. Where there is a stricture which is difficult to dilate, this may fail. Dilatation of a stricture is difficult. It may not be necessary, as it will sometimes dilate as you work, if you can get the forceps through. It would not take more than two or three minutes to get through a stricture. When the foreign body is high up in the lung it is difficult to see it. That can be helped a good deal by position. If the patient's head is turned to the side and the direct bronchoscope toward the middle, you can see the upper branch of the bronchus.

DR. RICHARDS, closing the discussion: The question arises in connection with these foreign bodies, how long and how much we are justified in searching for them? Dr. Smith's case calls to mind a case in which an attempt was made to remove a small gold pin of the safety pin variety. The patient was a young woman. Killian, before a committee of medical men, worked for an hour or more and failed. Later in the same summer Dr. Jackson tried to remove the same gold pin at the Rhode Island Hospital. He worked about an hour and a half, and gave it up. The girl went into the hospital as a patient, remained as a pupil nurse, has been there for two and a half years, and has never had any pain from that pin. It is a question sometimes whether we should not wait for more definite symptomatology. I think in Dr. Smith's case if they had waited the man might be alive to-day.

DR. SMITH, continuing the discussion: It was advised to wait in the case which I mentioned. The majority of the consultants wanted to wait, but Dr. Jackson said pneumonia might result. The matter was put up to the family, and they said operate by all means. The man was in such a nervous state it was thought he would die anyway. The head was bent over as far as the man's neck would allow, and it was determined that tracheotomy would offer no further aid. Dr. Jackson had recently read a paper in Brooklyn on the limitations of bronchoscopy. One week previous to that he had used similar instruments and had removed successfully a body which had gone down to the lower instead of the upper bronchus.

DR. INGALS, continuing the discussion: As to the duration of the operation, one might well adopt the rule that one hour should be the limit. Ordinarily a half hour is sufficient. If the patient is in good condition one may keep on for an hour, and then try again some other day. It is better to let the patient live with the foreign body in than to keep on too long. Many patients live for eight or ten years with foreign bodies in their lungs. It is better to wait and give the patient a chance. The probabilities are that a foreign body in the upper lobe will settle down to where it can be more easily reached.

The Sympathetic Syndrome of Sphenopalatine (Nasal) Ganglion Neurosis, Together With a Consideration of the Neuralgic Syndrome, and Their Treatment. DR. GREENFIELD SLUDER, ST. LOUIS.

Dr. Sluder reviewed his observations on the nasal ganglion which were summarized in his text "Etiology, Diagnosis, Prognosis and Treatment of Sphenopalatine Ganglion Neuralgia" (Transactions, Section Oto-Laryngology, American Medical Association, 1913). One point only was added to this text, namely, the very great difficulty incurred sometimes in effecting a cure of that neuralgia is explained by the fact that hyperplastic sphenoiditis underlies the disorder and may frequently be overlooked because the picture in the nose is not very striking and that the pain is very much of the time a pure ganglionic neuralgia. Such cases require careful selection to decide whether they be injected or take the Hajek postethmoidal radical operation. To the already described picture he added the "Sympathetic Syndrome," which in its fullest development is characterized by great sneezing, watery discharge and swelling of the nose within and without (rosacea), with profuse lacrimation, reddening and swelling of the lids, dilatation of the pupils with the appearance of slight exophthalmos (staring), a sense of itching and burning, or a feeling of wind blowing into them, together with a peculiar sense of discomfort, which seems independent of secretions or congestion; and more or less photophobia, sometimes very great. In addition to these symptoms, there are sometimes dyspnea with dry rales. He found that cocainization of the nasal ganglion relieved this symptom complex. He observed furthermore that it was often subdivided, sometimes being merely the sneezing, sometimes red nose (rosacea), sometimes secretions, lacrimation and photophobia. He stated that many of the ordinary coryzas are of this type, which, of course, are to be differentiated from affections of the membrane leading to suppuration of the sinus. He recommended the same treatment as previously given for the neuralgia syndrome. He offered a probable explanation based on anatomic and physiologic facts. Anatomically, the fibers of the cervical sympathetic from the nasal ganglion pass downward by way of the Vidian and carotid plexus to the cervical sympathetic and give branches to the cervical nerves and to the lower cervical ganglion, which is often fused with the first thoracic. These ganglia are anatomically allied to the nerves which, in addition to supplying the neck, also make up the brachial plexus and supply the upper extremity. Accelerator fibers for the heart and vasomotor fibers for the lung also pass through these ganglia. He felt that it was a lesion of the sympathetic elements of the nasal ganglion which explains not only these

vasomotor secretory phenomena, but also the pain referred into the neck, shoulders, arm, etc., as Vidian neuralgia, and that it came to pass by virtue of the sympathetic fibers which aborize about the cells of the spinal ganglia of the nerves which make the supply of the neck and upper extremity. He also offered as explanation of nasal asthma the fact that accelerator fibers for the heart and vasomotor fibers for the lungs pass through the lower cervical and first thoracic ganglia, through which also pass the cervical sympathetic fibers, and that the pain of angina pectoris might be explained by impulses arising in the heart passing upwards through the above mentioned ganglia, which are in association with the brachial plexus. He found that the pain of glaucoma, iritis, corneal ulcer, keratitis, conjunctivitis was controlled by anesthesia of the nasal ganglion, and that it was a nerve blocking process. He thought that it was the sympathetic that transmitted the "heavy pain" from these lesions which went into the occiput and the neck, and found that the course of some of these diseases was benefited by the control of the pain, and wondered if some trophic influence were not also exerted through these paths. He had at times succeeded in stopping the rales by cocainization of the nasal ganglion on the same side on which the nasal ganglion was cocainized in some cases of asthma of not too great severity.

DISCUSSION.

Dr. Harris P. Mosher, Boston: I think Dr. Sluder will remember that in a conversation some years ago I made the remark that somebody, some day, would do something with Meckel's ganglion, and straighten us out about hay fever. I have been waiting for someone to do this. Dr. Sluder has done it, and I congratulate him upon that achievement. Two years ago Dr. Matthews, of the Mayo Clinic, came to Boston and said he had been having great success in curing headache due to closure of the frontal ostium, and had cured hay fever by the cauterization of the two sides of the middle turbinal. I doubted that this was as he said it was; I did not adopt the procedure. He came back to Boston and I asked him about it; he said he had been curing frontal headache, asthma, and hay fever. After two years of knowledge of that procedure I began to try it in the clinic at the Massachusetts General Hospital. Cauterization of the outer and inner surfaces of the middle, followed by the application of adrenalin, was successful. I could not see then how it worked; I do see now, thanks to Dr. Sluder.

Dr. Sluder, closing the discussion: Answering the question asked by Dr. Freer, as to where I make the injection in order to get at the nasal ganglion: The sphenopalatine foramen is situated immediately posterior to the posterior tip of the middle turbinal, and absolutely never varies. It is at that point that I make the application. In this kind of cocainization I prefer to take the slightly curved applicator and curl around. For total cocainization of the ganglion I prefer to slip the applicator under the point and approach it thus. It takes a tiny bit of cocain, and the applicator under the turbinate can be left in place. For operative purposes I leave it under the tip. For the sympathetic acute syndrome I simply paint it, and paint again if necessary. It is astonishing to see the effect of the cocain. I use a saturated solution of cocain, by preference the

large crystals. The large crystal is freer from poison than the rest. A poison is left in the mother liquor. The small crystals come out first, and then the big ones, which are freer from poison. The ganglion is almost submucous in many skulls. With the Holmes pharyngoscope I can see how I am going. I prefer a straight needle under the tip.

Report of Progress of a Case of Pituitary Tumor Reported in 1914. DR. T. H. HALSTED, SYRACUSE.

At the last meeting of this society I reported a case of cyst of the hypophysis, occurring in an Italian girl, nine years of age, upon whom I operated, following the method of Hirsch, doing the operation in three stages under cocaine anesthesia.

This child came under my observation for the first time on February 6, 1914, fifteen months ago, at which time she presented briefly the following symptoms:

She was very large for her age, marked and increasing adiposity; skin was dry and harsh; hair dry and coarse, growing low on the forehead; eyes large, pupils dilated; marked general ataxia with intention tremor, chorieform movements; well marked athetosis; paralysis of the pupil; deep and superficial reflexes not altered. There was extreme difficulty in making coordinated movements, gait was unsteady, complained of frequent dizzy spells, headaches were very severe nearly every other night, and the sight was decidedly impaired. She was unusually bright mentally. An X-ray showed the sella turcica to be somewhat larger than the average normal at this age, while above and posterior to the sella the brain area was of lessened density.

All the operative work was under five per cent cocain with 1-2000 adrenalin, and was done in three stages, the last stage consisting in incising the tumor, which proved to be a cyst, liberating about one-half an ounce of clear, limpid, straw colored fluid, and was followed by quite a decided change in the symptoms.

The child recovered from these operations, finally being taken to her home in a neighboring village three months after the last operation, on the whole not improved by her surgical experience, the cyst having evidently refilled. The parents declined further operation, and I have seen her only two or three times, as I have gone out to see her at her home. Pituitrin was given her for several months, but for six months she has been without it. Her present condition is as follows:

Child is now ten years of age and is confined constantly to bed. Muscular weakness is so great that she cannot walk unaided, and to assume the upright position must be literally held or propped up. She can sit up in an arm chair or rocker with arm and head supports. There has been an enormous increase in adiposity, the fat being distributed throughout the body, while her head has increased to a size that for her age is almost huge. Comparing the measurements of her head with that of two sisters, one a year older and one a year younger, it is found that the measurement of the circumference on a level with the parietal eminences is in the older child twenty-one inches, the younger twenty and three-fifths inches, while the patient's head measures twenty-five inches. The vertical measurement of the circumference under the chin, back of the

ears, taking in the parietal eminences, is for the older child twenty-three inches, the younger, twenty-three and one-half inches, while the patient's measurement is twenty-six and one-half inches in this circumference. While the patient's head was larger than normal at the time of operations fifteen months ago, the increase in size since that time has been most striking. The color of the hair is a very dark brown, has not increased in coarseness, and the tendency to become reddish, as a year ago, has ceased. There is a marked tendency to somnolence most of the time, the child sleeping a great deal during the day as well as night, although for some days and for a week or two at a time this may not be the case. She is unable to feed herself because of the incoordinated movements and the lack of muscular strength. Intention tremor is very marked. She cannot wipe her face because of the tremor nor approximate the finger tips; or attempting to stand alone the foot is drawn inward and upward, in the position the foot would assume in standing on the outside of the foot. She is unable to hold her head up unaided, apparently due to lack of muscular strength.

The cranial nerves are apparently normal excepting the optic. Reaction to light is much impaired. Pupils are not widely dilated. She can distinguish fingers at six feet. The motor nerves all functionate, but are weak. She can distinguish heat and cold. Reflexes are exaggerated. Babinski is marked. There is apparently no great increase in the amount of urine, though it is frequently passed involuntarily. Stools the same. Speech is difficult and thick. Memory does not appear to be very greatly impaired. For instance, she asked by name after many of the patients and nurses she had not seen in fifteen months. On examination of the nose it is found that the base of the sella, covered by the mucous membrane, is freely seen, the anterior wall of the sphenoid being absent. It would be a very simple matter to reincise the tumor if the parents' consent were granted, or if it seemed advisable to do so. I have not urged an operation because of the almost certainty that the cyst would soon fill. The accompanying photograph gives a very clear picture of the child's general appearance.

DISCUSSION.

DR. JOHN F. BARNHILL, Indianapolis: I have employed the Cushing method, using the Cushing retractors. After the parts are dilated the septum can be taken away for the purpose of getting at the anterior wall of the sphenoidal sinus. After that the nose can be dilated as much as needed. This gives a clear-cut view of the field. The Cushing retractor and dilator are absolutely necessary. The speculum itself is built very much like the old Marion Sims bivalve speculum. The operator is not hindered by any hands being in the way. The method is very commendable.

DR. HALSTED, closing the discussion: I have never seen the Cushing operation, so I cannot compare the two. The method which I employed involves a little operation which West originally did, and to which Coffin called attention—that is, doing the submucous and going on up to the rostrum of the sphenoid. In the second operation the posterior end of the septum was taken off completely, mucous membrane and all. That

gave a tremendous field. The advantage of this method over Cushing's is that it can be done under local anesthesia, in two or three stages, and one gets as good view as is necessary.

History of a Tumor of the Pharynx Eventually Terminating in Sarcoma.

DR. RALPH BUTLER.

A healthy married woman, aged twenty-one years, developed a series of pharyngeal tumors which were apparently cured four times in the course of two years. The first attack yielded to inunctions and protiodid of mercury. An almost fatal attack was relieved by iodid of potassium, mercury and neosalvarsan. In two other recurrences, the x-ray treatment was used in addition to the mercury, iodid of potassium and neosalvarsan. The Wassermann reaction was weakly positive at first, and the luetin reaction was positive. The first microscopic examination suggested syphilis, the second, small round-cell sarcoma. The autopsy showed small round-cell sarcoma with beginning metastasis.

DISCUSSION.

DR. GEORGE L. RICHARDS, Fall River: A certain number of sarcomas of the upper air tract seem to spontaneously disappear, or to be influenced by remedies which it hardly seems to think would have any curative effect. I recall a case of sarcoma of the right upper jaw, in a woman fifty to fifty-five years of age, a boarding house keeper. The diagnosis of sarcoma of the antrum was made by a laryngologist of ability, and this was confirmed by general surgeons. She was being treated with Coley's fluid when she fell into the hands of a Christian Science healer, and the tumor disappeared. I have seen her four or five times in association with a general surgeon. I have tried to get the opportunity of examining her again, but she is still under the control of the Christian Science healer.

DR. G. HUDSON MAKUEN, Philadelphia: I had the privilege of seeing the patient mentioned by Dr. Butler during the interval of the fourth time that she appeared to be cured. I think no one who was present at that meeting thought of the probability of a return of the trouble. She had nothing in the throat except a considerable amount of scar tissue and the cicatricial contractions, as described by Dr. Butler. Her breathing and articulation were fairly good. It was a surprise to us all when she reported her death at the following meeting.

DR. GEORGE A. LELAND, Boston: I was called last winter to see an old lady, seventy-three years of age, who had enlarged glands in the neck. I made the diagnosis of lymphosarcoma. She was put under treatment with Coley's fluid, and he writes me that the tumor has entirely disappeared.

DR. HARMON SMITH, New York City: We should not depreciate the benefits of Coley's fluid. I recall a case of sarcoma of the antrum occupying the entire nasal cavity and projecting outward. There was lymphatic involvement, and the case seemed hopeless. It was pronounced sarcoma by the pathologists. I said the only thing we could do was to operate, and that if he died on the table it would be the most satisfactory termination of the case. The patient went to the General Memorial Hospital, was put under treatment with Coley's fluid, and the sarcoma entirely disappeared.

DR. HENRY L. SWAIN, New Haven: Whether the disappearance of these tumors is due to tumor transformation, as has been suggested, or to the agents employed, the fact is that we stand with reference to them in the position of strict empiricism. This applies to Coley's fluid as much as to anything else. If we could collect all the observations on the subject, we might then have something to go by; until that is done its use will always be empirical. I have two cases in which it seemed to do good, and many others in which it accomplished nothing.

The following are the newly elected officers for the ensuing year:

President	DR. G. HUDSON MAKUEN
First Vice President	DR. J. GORDON WILSON
Second Vice President	DR. CHRISTIAN R. HOLMES
Secretary	DR. HARMON SMITH
Treasurer	DR. J. PAYSON CLARK
Librarian	DR. JOSEPH H. BRYAN

Foreign Bodies in Bronchi and Esophagus. G. W. BOOT, *Jour. Amer. Med. Assn.*, March 6, 1915.

The cases reported by Boot are of interest in showing the value of the Roentgen ray in the diagnosis of these cases. The first case, that of a metal "jackstone" in the larynx of a 19-months-old child, was of interest in showing the length of time a foreign body of this size could remain in an infant larynx. It was lodged there for a period of at least four weeks. During that time the child was unable to swallow, and the cause of the trouble was unrecognized. It was removed by tracheotomy. The second case was one of removal of an upholsterer's tack from the right bronchus of a nine-year-old deaf-mute. In the third case a toy arrow-head had been swallowed by a ten-year-old boy, who was treated for bronchitis, tuberculosis, etc. The patient finally developed pneumonia, but recovered after removal of the arrow-head from the bronchus. In the fourth case a child swallowed an open safety-pin, which lodged in the esophagus. This was easily removed.

ED.

BOOK REVIEWS.

The Müller-Walle Method of Lip-Reading for the Deaf. (Bruhn Lip-Reading System.) By MARTHA E. BRUHN, Principal of the Müller-Walle School of Lip-Reading and the Müller-Walle Training School for Teachers in Boston, Mass. Thos. P. Nichols & Son Co., Lynn, Mass., 1915.

The welcome which has been awaiting a book on lip-reading from Miss Martha E. Bruhn, of Boston, who translated the Müller-Walle System from German into English, has at last had a chance to express itself, materially. The Müller-Walle method of lip-reading for the deaf adequately fills a demand which has been going out from students and teachers of lip-reading ever since the introduction of the Müller-Walle System into America. It is a systematic treatise on the most natural, and withal, the simplest method that has ever been devised in this field. The introduction very lucidly sets forth the distinctive features of the method, and the lessons themselves carry the student by easy stages into the acquirement of an art, which, if taught by artificial methods, can be made insurmountably difficult. The principle of working from the simple to the intricate, of going from the known to the unknown, is constantly followed throughout the thirty lessons.

The naturalness and simplicity of the Müller-Walle System is apparent at the merest glance. With the knowledge of phonetics that is part of the equipment of every trained teacher of the deaf, a working knowledge of this system is very easily built up, especially if the teacher is conversant with the ordinary principles of psychology.

There cannot be the slighest question of the value of such a book as Miss Bruhn has put before the public, but one question which has never been satisfactorily answered, remains unanswered still. What possible motive could there be in so restricting the use of this method as to make its diffusion impossible? The method has, since its translation into English, been so hampered by signed contracts containing promises by normal students not to teach the method to others, that its use has been confined to the small number of teachers who found it convenient to spend a not inconsiderable amount of time and money in Boston, and even though the book has now been published and the method explained detail, the author still holds her normal students to their contract. To be sure, some of the secrets had leaked out before method explained in detail, the author still holds her normal students teachers who were reaching out for any assistance they might find in their work. The argument is that the method "would lose its individuality" if the normal course were given by the graduates of the school, but it would seem better for teachers everywhere to have been given something of the true meaning of the system than to have had mere glimpses of it, obtained in a more or less under-hand way. Certainly, they would have been able more intelligently to follow explanations freely given than to work blindly upon the few hints they were able to gather.

It seems pertinent to ask, how far the oral system of teaching the deaf would have progressed in this country, had Dr. Bell, Miss Yale, Dr. Crouter, and other pioneers acted upon selfish motives, whether actuated by hope of self-aggrandizement or of pecuniary profit? The noble example of the wholesome generosity and magnificent altruism of these fine souls is magnified by the instance of the inexcusable handicap placed upon the promulgation of the Müller-Walle System in America.

ETHEL M. HILLIARD.

The Etiology of Stammering and Methods for its Treatment. Neurographs, Vol. 1, No. 4, The Thymus-Stammerer Number. By WILLIAM BROWNING, Ph. B., M. D. Published by Albert T. Huntington, Brooklyn, N. Y. 1915.

Dr. Browning believes that stammering is not primarily a disorder of the central nervous system, nor an isolated functional affair, but that it is a symptom and part of a widespread or systemic condition which condition is a phase of hyperthymism. The brochure is based essentially upon a study of twenty-five cases of stammering, the patients varying in age from a little over two years to sixty-five years, together with references to the literature, a consideration of other abnormal findings or "stigmata" (adenoids, enlarged tonsils, enlarged lymph glands, muscular instability, hypotonia, abnormalities of bone development, mentality, etc.) The important finding was that in every one of the twenty-five cases there was enlargement of the thymus or its abnormal persistence and Dr. Browning states (page 304) that "So far no case of stammering, however severe or slight or at whatever age, has been met with that did not show signs of block in the thymic area." ED.

The Straight Methods of Direct Laryngoscopy, Bronchoscopy and Esophagoscopy. By RICHARD HALL JOHNSTON, M. D. *The American Journal or Surgery*, New York, 1915.

This is a brochure consisting of the articles previously published by Dr. Johnston in the *American Journal of Surgery*. They cover the subject very thoroughly and their present compilation into one little volume is very commendable in that they can more easily be kept together and at hand. The brochure contains ten chapters, as follows: 1. Introductory; 2. Anesthesia; 3. Anatomy and physiology; 4 Direct laryngoscopy; 5. Diseases of the larynx amendable through direct laryngoscopy; 6. Tracheobronchoscopy; 7. Diseases amendable to treatment by tracheo-bronchoscopy; 8. Bronchoscopic operations and methods of treatment; 9. Esophagoscopy; 10. Diseases amendable to treatment through the esophagoscope. It is thus seen that the arrangement is very logical and it should also be remarked that the collected papers are written very lucidly. It is a handy little volume which, if bound in cloth instead of in paper, would surely be more lasting. ED.

Die Nasalen Reflexneurosen und ihre Behandlung. VON DR. ALBERT BLAU, Privatdozenten an der Universität Bonn. A. Marcus und E. Webers Verlag, Bonn, 1915.

Time was when cauterization of the mucous membrane of the nose was *l'ordre du jour* for any condition of obscure etiology—rhinological, neurological and even gynecological. A galvano-cautery used to be one of the first essentials of a rhinologist's therapeutic equipment. Every other neurasthenic who taxed her physician's patience and efforts was sure to be recommended, eventually, to a rhinologist for examination. In the majority of cases some abnormality was found in the nose which was at once attacked on the supposition that the primary causative factor had been discovered, and often the galvano-cautery was used even without any such discovery. It is not to be denied that in some cases a direct connection between a septal deflection, some accessory sinus involvement or a hyperesthesic mucous membrane and a neurosis does exist and that the correction of the pathological condition in the nose brings about relief. But in very many cases the cure, apparent or real, may be due as much to suggestion as to the treatment. Dr. Blau revives some of the fantastic notions about nasal reflex neuroses that prevailed years ago. The cases that he mentions have nothing remarkable to recommend them and in practice are met with constantly. For ex-

ample, what is there remarkable about a neurotic lady who suffered from palpitation of the heart, dyspnea, insomnia and other symptoms without any relief from any treatment. A marked deviation of the septum was discovered and when this was corrected by the submucous operation she was cured. Such instances are so common that hardly any mention is ever made of them.

In regard to treatment, especially of asthma of nasal reflex origin, Dr. Blau states that treatment of abnormal nasal conditions should be undertaken only if those conditions of themselves, irrespective of the neurosis, require treatment. That is merely stating a fundamental truth which everybody knows. It is self-evident.

Beyond question, there is such a thing as a nasal reflex neurosis, but Dr. Blau places too much importance upon it although he does recognize that in many cases the basic condition is a neuropathic one and that the nasal condition, if it have any relation to it, is merely a secondary, contributory factor. The whole subject of nasal reflexes is in a very controversial state and it is necessary to recognize a middle ground where and where not the nose may be at fault without running to an over-enthusiastic extreme. ED.

Applications may now be made for the fellowship in eye, ear, nose and throat at the University of Minnesota. The appointment is soon to be made of an additional "Fellow." This position covers a period of three years, during which the student devotes his entire time to the preparation as a specialist in eye, ear, nose and throat, taking courses in laboratory and clinical branches that are offered, and serving as an assistant in the clinic. At the expiration of the three years' service and satisfactory work, the degree Doctor of Science (in Ophthalmology and Oto-Laryngology) is granted. The fellowship carries with it an honorarium of $500 the first year, $750 the second year and $1,000 the third year. Requirements for admission are limited to those who have a bachelor's degree or its equivalent, as well as the degree of Doctor of Medicine from an acceptable institution, with one year's experience as an interne in a hospital of recognized standard or its equivalent. Applications should be made to Dr. Frank C. Todd, Chief of the Division of Eye, Ear, Nose and Throat, or to Dean Daniel Ford of the Graduate Department of the University of Minnesota.

CORRECTION.

In the colored plate illustrating the anatomy of the setting of the faucial tonsil in the pharynx, in Dr. Hudson-Makuen's article on this subject, in the October issue, the line C, showing the point of cleavage in the operation for the removal of the tonsil, should be about one-quarter of an inch higher or at the upper extremity of the colored line. This correction is made because of its importance in connection with the operation.